

CO N V A I R
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL --- Dtd ---

CHANGE NO: 111

MODEL: (880) 22-1

TITLE: Specification Administrative Change

ORIGIN: Contractor initiated.

REASON FOR CHANGE: To clarify intent of the Specification.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
0	0	0	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY:

Chief of Contract Administration
Commercial

DATE: _____

CONVALIN: SD

Hughes Tool Company
Change No. 111

Title: Specification Administrative Change.

Origin: Contractor initiated.

Reason for Change: To clarify intent of the Specification.

Description of Change:

Page 126, Paragraph 3.20.3.3 PRESSURE CONTROLS:

Revise the eighth sentence, starting in the 22nd line, to read as follows:

"On the ground, with full compressor output, maximum differential pressure will be less than .3 Hg with .2 Hg as a design objective."

Effect on Weight Empty: 0
Effect on Balance: 0
Effect on Performance: 0

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,148 Dtd _____

CHANGE NO: 110A

MODEL: (880) 22-1

TITLE: Revision of Auto Pilot, Installation of Rotary Rudder Servo
in Lieu of Linear Actuator.

ORIGIN: Contractor initiated.

REASON FOR CHANGE: To satisfy dynamic requirements of control system;
and revision to CCP No. 110.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty 0	Oper. Wt. Empty 0	0 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE

Cancelled None

*See S.O. 880-1-84
Period 1-8-58*

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 110A

Title: Revision of Auto Pilot, Installation of Rotary Rudder Servo
in Lieu of Linear Actuator

Origin: Contractor initiated.

Reason for Change: To satisfy dynamic requirements of control system;
and revision to CCP No. 110.

Description of Change:

Page A9, APPENDIX I-C, INSTRUMENTS AND RELATED EQUIPMENT:

Revise the items listed under AUTO PILOT as follows:

AUTO PILOT (Bendix Type PB-20)

Quan. Reqd	Description	Manufacturer	Part or Spec. Number
1	Air Data Sensor	Eclipse Pioneer	4918-1-A
1	Three Axis Rate Gyro	Eclipse Pioneer	15831-1-A
1	Vertical Gyro	Eclipse Pioneer	15837-1-A
1	Power Junction Box	Eclipse Pioneer	DR-41-A1
1	Auto Pilot Adapter	Eclipse Pioneer	15236-1-A1
1	Vibration Mount	Eclipse Pioneer	ED57-A1
1	Dynamic Vertical Sensor	Eclipse Pioneer	4912-1-A
1	Amplifier and Computer Box	Eclipse Pioneer	15470-1-A1
1	Gyro Test Adapter	Eclipse Pioneer	15251-1-A1
3	Surface Servo	Eclipse Pioneer	15653-1-A
1	Trim Servo	Eclipse Pioneer	15673-1-A
1	Automatic Pilot Controller	Eclipse Pioneer	16906-1-A
3	Position Transmitter	Eclipse Pioneer	4559-7-A6-1
3	Pulley and Servo Mount	Eclipse Pioneer	DY-10-1-A1
1	Trim Servo Disconnect	Eclipse Pioneer	DQ-28-A1
1	Three Axis Trim Indicator	Eclipse Pioneer	15101-1F-A1
1	Amplifier and Computer Adapter	Eclipse Pioneer	SD-1-A1

Enclosure: (A) Four (4) copies of sketch showing proposed change from
a linear to a rotary actuator for rudder control system
of autopilot.

Effect on Weight Empty: 0

Effect on Balance: 0

Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

CONFIDENTIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,152 Dtd 21 October 1957

CHANGE NO: 109A

MODEL: (880) 22-1

TITLE: Cargo Compartment, Installation of Baggage Folding Shelves

ORIGIN: TWA Mock-up Comments dated 25-27 February 1957 and TWA Letter No. 880-388, dated 15 November 1957

REASON FOR CHANGE: Customer request and revision to CCP No. 109

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty Proposal 1 + 103 lbs	Oper. Wt. Empty +103 lbs	+50367
Proposal 2 + 52 lbs	+ 52 lbs	+55588
Proposal 3 + 105 lbs	+105 lbs	+70700

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:
If more than one of the proposals contained
herein are accepted, revised Specification
language will be submitted with an applicable
CCP to be consistent with the accepted combination. Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____
Title: _____

BY: _____
Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 109A

Page 1 of 3

Title: Cargo Compartment, Installation of Baggage Folding Shelves

Origin: Ref: IWA Mock-up Comments dated 25-27 February 1957 and IWA
Letter No. 689-388 dated 15 November 1957

Reason for Change: Customer request and revision to CCP No. 109

PROPOSAL NO. 1

Description of Change:

Page 14, Paragraph 3.1.2.2 LOADING SUMMARY:

Under: Payload, after item 3, change the following:

From: 850 cu ft

To: 839 cu ft

Page 110, Paragraph 3.19.2.5 LUGGAGE AND CARGO COMPARTMENTS:

Add the following after the fourth sentence:

"A folding shelf installation consisting of four shelves, webbing and supporting legs shall be installed along the left hand sides of the forward cargo compartment only. Straps shall be installed for the retention of the shelves in the folded position. The supporting legs shall lie flat and be retained against the shelves. The baggage shelves shall be designed for a maximum total capacity of 245 pounds per shelf."

Enclosure (A) One (1) copy of Convair Drawing No. 22-09910, sheets 1 and 2, dated 25 October 1957. (Sheet 1 revised 22 November 1957)

Effect on Weight Empty: +103 pounds

Effect on Balance: +50,367 inch-pounds

Effect on Performance: None

CONVAIR: SD

Hughes Tool Company
Change No. 109A

Page 2 of 3

PROPOSAL No. 2

Page 14, Paragraph 3.1.2.2 LOADING SUMMARY:

Under Payload, after item 3, change the following:

From: 850 cu ft

To: 844.5 cu ft

Page 110, Paragraph 3.19.2.5 LUGGAGE AND CARGO COMPARTMENTS:

Add the following after the fourth sentence:

"A folding shelf installation consisting of two shelves, webbing and supporting legs shall be installed along the forward left hand side of the aft cargo compartment only. Straps shall be installed for the retention of the shelves in the folded position. The supporting legs shall lie flat and be retained against the shelves. The baggage shelves shall be designed for a maximum total capacity of 245 pounds per shelf."

NOTE: See Convair Drawing No. 22-09910, Sheets 1 and 2, as referenced in Proposal No. 1 Enclosure (A).

Effect on Weight Empty: +52 pounds

Effect on Balance: +55,538 inch-pounds

Effect on Performance: None

CONVAIR: SD

Hughes Tool Company
Change No. 109A
Page 3 of 3

PROPOSAL No. 3

Description of Change:

Page 14, Paragraph 3.1.2.2 LOADING SUMMARY:

Under Payload, after item 3, change the following:

From: 850 cu ft

To: 834 cu ft

Page 110, Paragraph 3.19.2.5 LUGGAGE AND CARGO COMPARTMENTS:

Add the following after the fourth sentence:

"A folding shelf installation consisting of two shelves, webbing and supporting legs shall be installed, one forward and one aft of the door along the right hand side of the forward cargo compartment and one shelf forward of the door along the right hand side of the aft cargo compartment. Straps shall be installed for the retention of the shelves in the folded position. The supporting legs shall lie flat and be retained against the shelves when shelves are in a stowed position. The baggage shelves shall be designed for a maximum total capacity of 340 pounds per shelf."

Enclosure (A) One (1) copy of Convair Drawing No. 22-09910, sheet 3, dated 22 November 1957.

Effect on Weight Empty: +105 pounds

Effect on Balance: +70,700 inch pounds

Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPMC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL --- Dtd ---

CHANGE NO: 108A

MODEL: (880) 22-1

TITLE: National Aircraft Standard Bolts, Use of

ORIGIN: Contractor initiated.

REASON FOR CHANGE: To include the high strength NAS bolts in the standard fastener category specified for use in the aircraft; and revision to CCP No. 108.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	
0	0	0 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 108A

Title: National Aircraft Standard Bolts, Use of

Origin: Contractor initiated.

Reason for Change: To include the high strength NAS bolts in the standard fastener category specified for use in the aircraft; and revision to CCP No. 108.

Description of Change:

Page 4, Paragraph 1.1 SCOPE:

Revise second paragraph on page as follows:

"It shall be permissible to use Huck lock bolts, barrel nuts, taper pins, roll pins, shear type Camlock fasteners, Hi-shear rivets, Jo-bolts, corrosion resisting steel rivets; and AN, MS, NAS and Convair standard fasteners."

Effect on Weight Empty: 0

Effect on Balance: 0

Effect on Performance: 0

Exhibit "A", not a part of Specification language.

1. NAS internal wrench bolts are now part of NS Standard.
2. Convair is installing NAS external wrenching bolts and screws in some applications.

108 - *Cancelled*

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPFC NO: ZD-22-00 2

DATE: _____

CUSTOMER: Hughes Tool Company

MCL _____ Dtd _____

CHANGE NO: 107

MODEL: (880) 22-1

TITLE: Deletion of Anti-icing Provisions and Installation of a Radome Rain Erosion Boot.

ORIGIN: Contractor initiated

REASON FOR CHANGE: To reduce weight

Rejected

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty		
-15.0 lbs	-15.0 lbs	-6456	Inch-lbs.

EFFECT ON GUARANTEED PERFORMANCE : *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY:

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Co.
Change No. 107

Page 1 of 1

Title: Deletion of Anti-Icing Provisions and Installation of a Radome Rain Erosion Boot.

Origin: Contractor initiated

Reason for Change: To reduce weight

Description of Change:

Page 27, Paragraph 3.7.1.2 CONSTRUCTION:

Change the thirteenth line starting with:

"Provisions for a radome shall be provided for use with a weather radar antenna on the extreme forward end of the fuselage."

To: "A radome shall be installed for use with a weather radar antenna on the extreme forward end of the fuselage. A rain erosion boot shall be installed on the nose radome".

Page 103, Paragraph 3.17.4.1 WEATHER PENETRATION AIRBORNE RADAR:

Delete the fourth sentence as follows:

"The radome shall be suitably anti-iced".

Page 124, Paragraph 3.20.2.1 ANTI-ICING OF NONTRANSPARENT AREAS:

Delete the following in the second line:

"The radome and"

Delete the following last sentence: (Ref.: CCP 15A)

"Adequate de-icing means shall be incorporated for de-icing of the radome".

Figure 3.20-1 AIR CONDITIONING SCHEMATIC:

Revise figure as required to reflect above change.

Effect on Weight Empty: -15.0 pounds

Effect on Balance: -6456 inch-pounds

Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-00 2

DATE: _____

CUSTOMER: Hughes Tool Company

MCL _____ Dtd _____

CHANGE NO: 106

MODEL: (880) 22-1

TITLE: **Specification Administrative Change**

ORIGIN: **Contractor initiated**

REASON FOR CHANGE: **To clarify intent of specification**

Cancelled

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty		
None	+345 lbs	+195,445	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

CCP No. 23A

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY:

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: S. D.

Hughes Tool Company
Change No. 106

Title: Specification Administrative Change

Origin: Contractor initiated

Reason for Change: To clarify intent of specification

Description of Change:

Page 14, Paragraph 3.1.2.2 LOADING SUMMARY:

Revise the weights for the following items as follows:

<u>Fixed Useful Load (Standard Configuration)</u>	3,316
Flight Equipment	84
Emergency Equipment	184
Passenger Service	1,427

Effect on Weight Empty: None

Effect on Useful Load: +345 lbs

Effect on Balance: +195,445 inch-lbs

Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL --- Dtd ---

CHANGE NO: 105

MODEL: (880) 22-1

TITLE: Specification Administrative Change

ORIGIN: Contractor initiated.

REASON FOR CHANGE: To clarify intent of specification.

Rejected

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty	
0	0	0 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 105

Title: Specification Administrative Change

Origin: Contractor initiated.

Reason for Change: To clarify intent of specification.

Description of Change:

Page A15, APPENDIX I-C, FURNISHINGS:

Revise page as follows:

Change title as follows:

From: "FURNISHINGS"

To: "FURNISHINGS UNIT WEIGHTS"

Delete "CONVAIR FURNISHED - CONVAIR INSTALLED"

Revise first sentence of explanatory notes as follows:

"The following weights are those allotted for the specific items noted, where applicable."

Delete "4- Double Passenger Seats (Including fabric, ashtray and belt)"

Add after 2- Double Lounge Seats (Including fabric and belt):
"120 lbs."

Change parenthetical statement under 3- Buffet Structure as follows:

From: "(Including (2) coffee makers, drawers and storage)"

To: "(Including weight for 2 coffee makers, drawers and storage)"

Revise "80- Double Passenger Seats" to "40- Double Passenger Seats"

Effect on Weight Empty: 0

Effect on Balance: 0

Effect on Performance: None

TWA- Change no. 104
(Cancelled)

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO, CALIFORNIA

COMMERCIAL CHANGE PROPOSAL

SPEC NO. ZD- 22-002

DATE: _____

CUSTOMER Hughes Tool CompanyMCL 10,155 DTD 28 October 1957CHANGE NO. 104BMODEL: (880) 22-1TITLE: 52-Inch Wide Passenger Seats, Installation ofORIGIN: TWA Letter No. 880-362, dated 23 October 1957REASON FOR CHANGE: To provide a seat in accordance with Customer comments.

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

GUAR. WT. EMPTY

OPER. WT. EMPTY

See attached sheet.

INCH LB.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* NEGIGIBLE CHANGES WILL BE ACCUMULATED AND
TOTALS REFLECTED IN A FUTURE CHANGE PROPOSALACCEPTANCE OF THIS CHANGE IS DEPENDENT UPON
PRIOR ACCEPTANCE OF THE FOLLOWING CHANGES:

ENGINEERING APPROVAL

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

RECURRING: _____

NON-RECURRING: _____

TOTAL: _____

ACCEPTED:

CONVAIR, A DIVISION OF GENERAL DYNAMICS CORP.

BY _____

DATE _____

COINVAIR: SD

Hughes Tool Company
Change No. 104B

WEIGHT DATA

PROPOSAL "A"

Effect on Guaranteed Weight Empty: ~~483.0~~ pounds
Effect on Operating Weight Empty: ~~483.0~~ pounds
Effect on Balance: ~~472,708~~ inch-pounds
Effect on Performance: None

PROPOSAL "B"

Effect on Guaranteed Weight Empty: ~~4108.0~~ pounds
Effect on Operating Weight Empty: ~~4108.0~~ pounds
Effect on Balance: ~~494,608~~ inch-pounds
Effect on Performance: None

PROPOSAL "C"

Effect on Guaranteed Weight Empty: ~~4115.0~~ pounds
Effect on Operating Weight Empty: ~~4115.0~~ pounds
Effect on Balance: ~~4100,740~~ inch-pounds
Effect on Performance: None

PROPOSAL "D"

Effect on Guaranteed Weight Empty: ~~4140.0~~ pounds
Effect on Operating Weight Empty: ~~4140.0~~ pounds
Effect on Balance: ~~4122,640~~ inch-pounds
Effect on Performance: None

CONVAIR: SD

Hughes Tool Company
Change No. 104B

Page 1 of 5

Title: 52-Inch Wide Passenger Seats, Installation of

Origin: TWA Letter No. 880-362, dated 23 October 1957

Reason for Change: To provide a seat in accordance with Customer comments.

Description of Change:

PROPOSAL "A"

Page 106, Paragraph 3.19.1.1.5 PASSENGER SEATS:

Add the following to the end of the paragraph:

"Hole provisions on seat base shall be made for the future incorporation of optional two-position tubular foot rest."

Page 2B, Figure 1-2 STANDARD SEATING ARRANGEMENT:

Revise Figure to show the following seat width and spacing:

- "a. 52.0 inches - total width
- b. 3.2 inches - side arm width
- c. 5.0 inches - center arm width
- d. 20.2 inches - clearance between arms, each seat"

Page 129, Paragraph 3.23.2 EQUIPMENT INTERCHANGEABILITY:

Add under Item 2 - Interchangeability Without Alteration:

Double asterisk before **Passenger Seat Assembly L.H., Passenger Seat Assembly R.H.

Add the following note to the bottom of the page:

**NOTE: Passenger seats immediately aft of the escape hatches shall have special outboard arm rests, however, they will be interchangeable in all other respects.

Page A-24A, APPENDIX II, Figure 1 ALTERNATE SEATING ARRANGEMENT:

Revise Standard Section of "Mixed Seating Arrangement" of figure in same manner as Figure 1-2.

CONVAIR: SD

Hughes Tool Company
Change No. 104B

Page 2 of 5

Page A-15, APPENDIX I-C, FURNISHINGS:

Change 22nd item as follows:

To: *"36 Double Passenger Seats (Including
fabric and belt) 1,912 lb"

Enclosure: (A) One copy sketch "CONVAIR 880 52" SEAT", Sheets 1
through 4 (for information only)

Effect on Weight Empty: +83.0 pounds

Effect on Balance: +72,708 inch-pounds

Effect on Performance: None

The following shall not appear in the Specification language:

*See CCP No. 170, Cabin Interior Modification and 12-Place Club
Area, for revision of remaining four cabin double seats and two
lounge double seats to four double and one quadruple club area
seats.

The increase represented by Proposal "A" is for the following:

- a. Increased structure and trim of center arm rest.
- b. Increased width of each back structure and padding.
- c. Increased width of each bottom structure and cushions.
- d. Increased use of Customer selected fabric above that weight
originally specified and above that amount accounted for by
CCP No. 160A, Revision to Interior Fabric Weight.

CONVAIR: SD

Hughes Tool Company
Change No. 104B

Page 3 of 5

PROPOSAL "B"

Same as Proposal "A" except add the following to the end of paragraph
3.19.1.1.5 PASSENGER SEATS:

"The following shall be provided: wide outside arms."

Page A-15, APPENDIX I-C, FURNISHINGS:

Change 22nd item as follows:

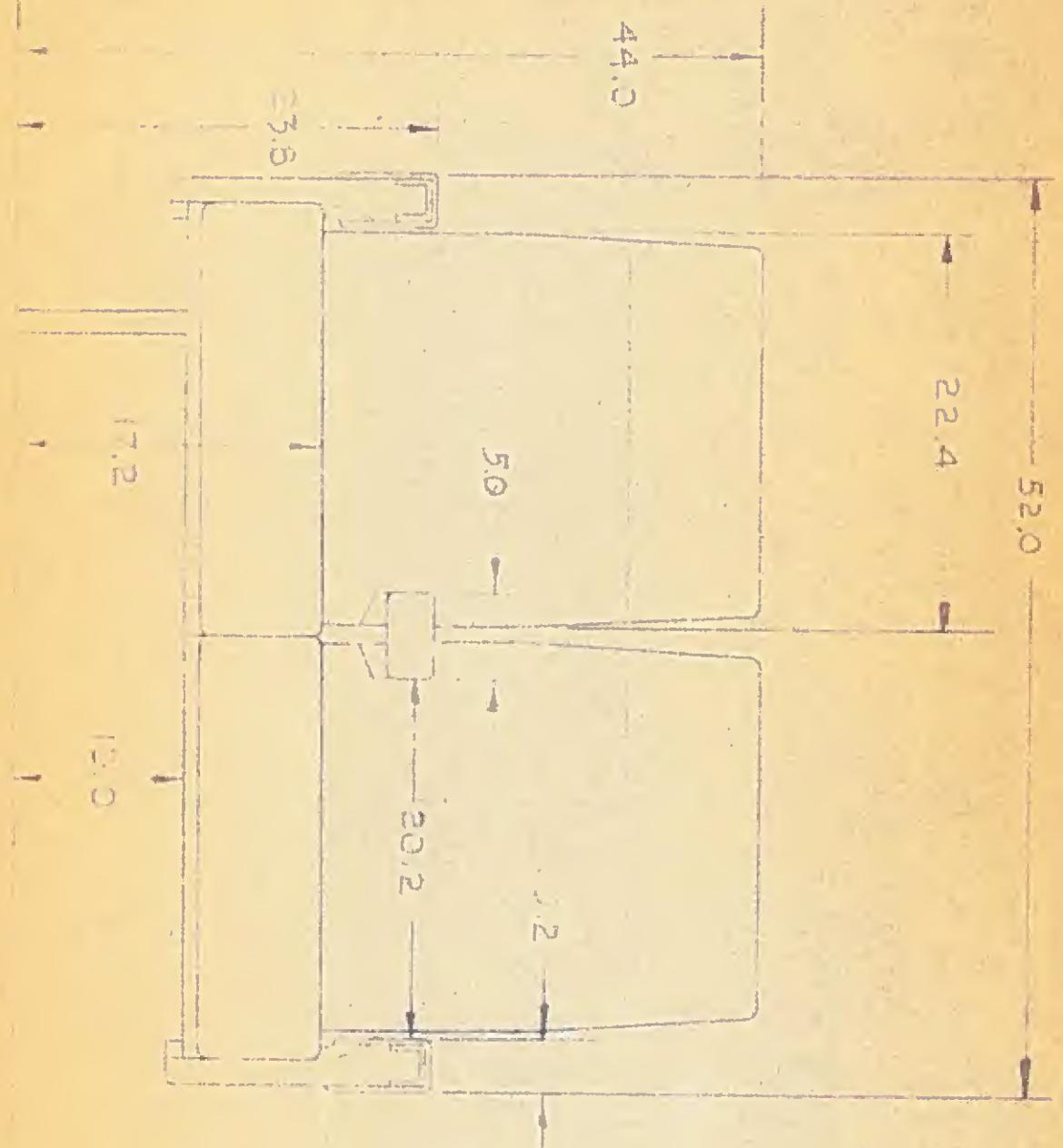
To: *36 Double Passenger Seats (Including
fabric and belt)

1,937 lb"

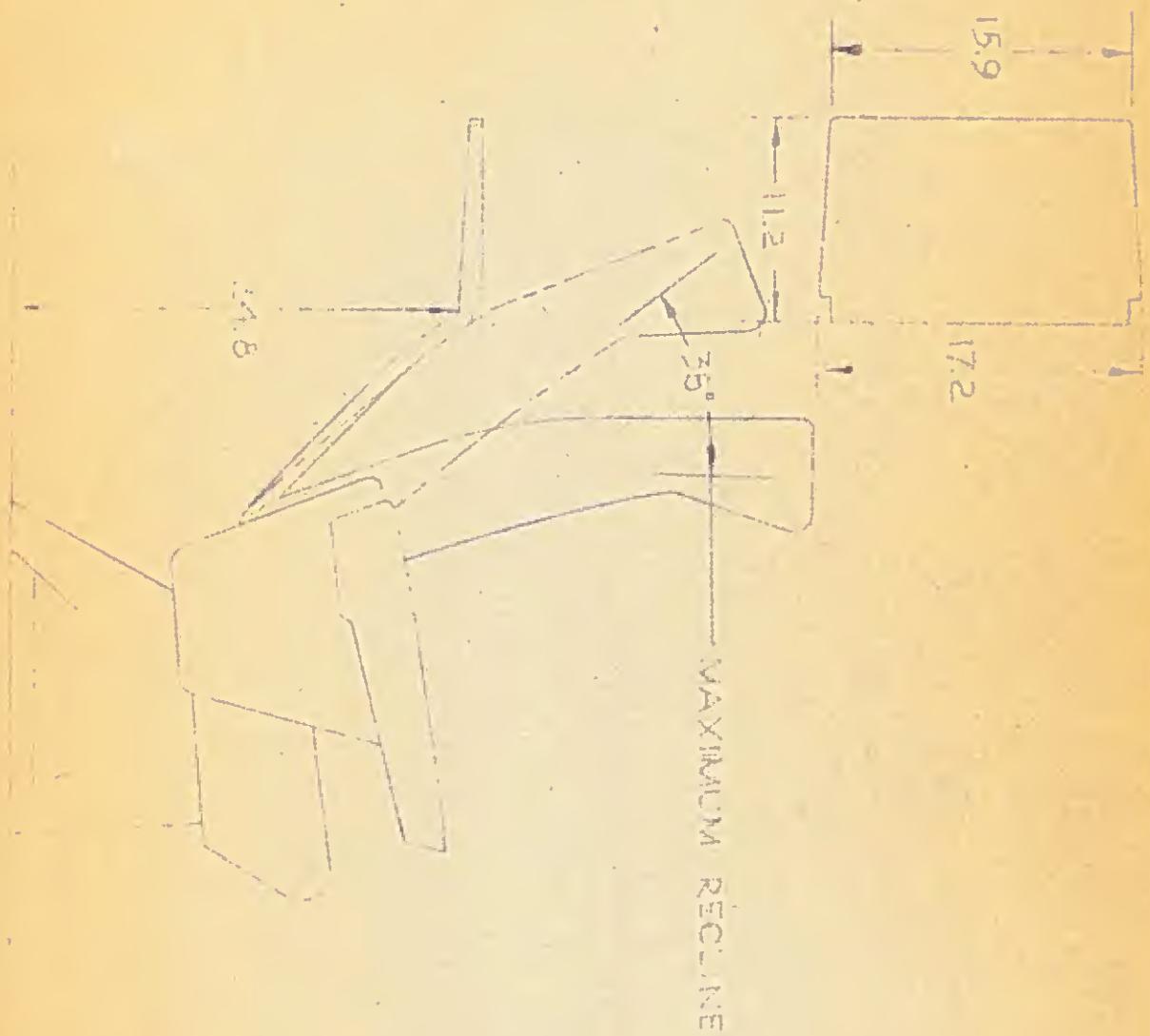
Effect on Weight Empty: +108.0 pounds
Effect on Balance: +94,608 inch-pounds
Effect on Performance: None

Joe GNAS
X-1803

Enclosure to CCP No. 104B



CONVAIR 880 52" SEAT - TWA



CONVAIR: SD

Hughes Tool Company
Change No. 104B

Page 4 of 5

PROPOSAL "C"

Same as Proposal "A" except add the following to the end of paragraph
3.19.1.1.5 PASSENGER SEATS:

"The following shall be provided: hydraulic recline locks."

Page A-15, APPENDIX I-C, FURNISHINGS:

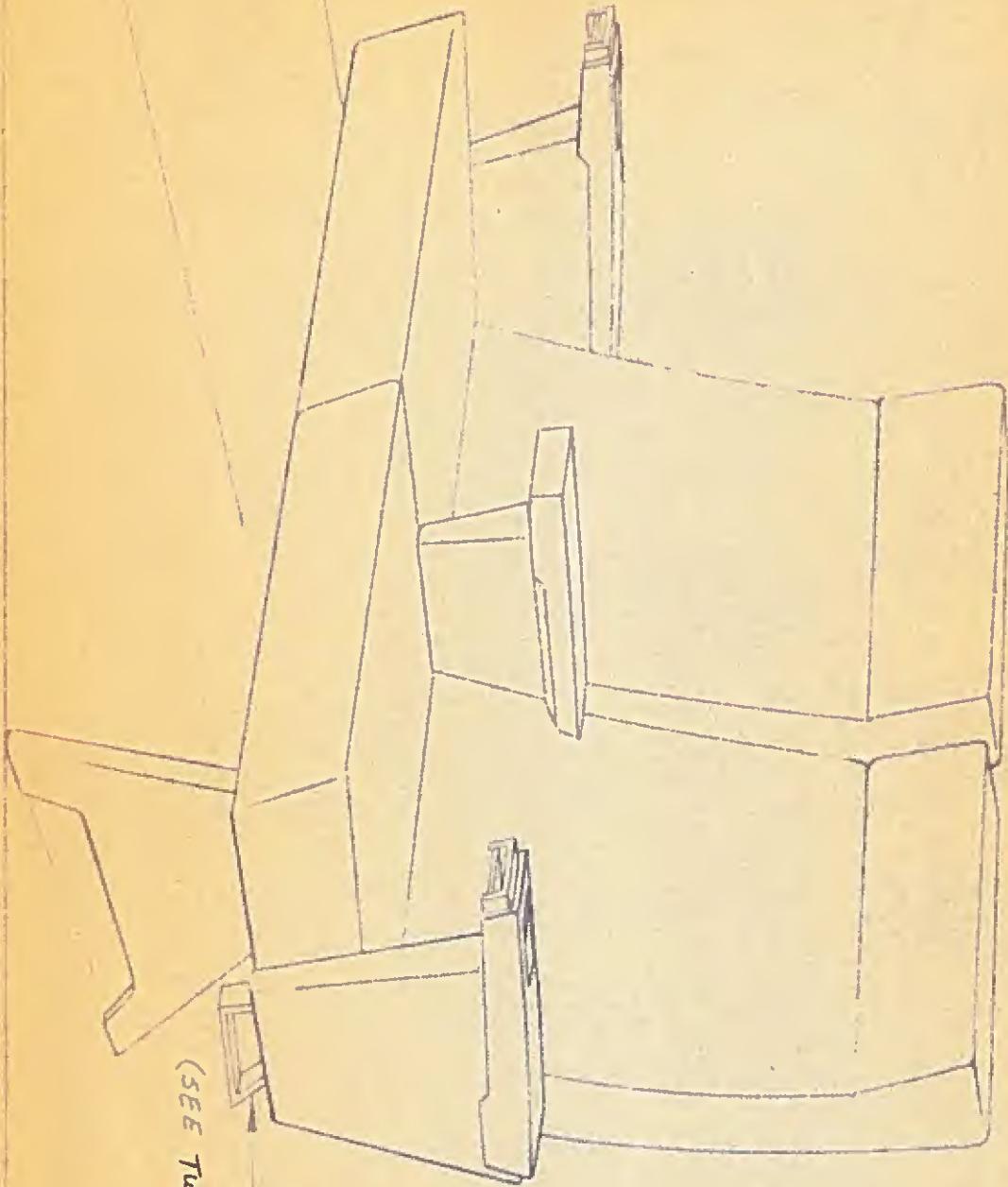
Change 22nd item as follows:

To: *"36 Double Passenger Seats (Including
fabric and belt)

1,944 lb"

Effect on Weight Empty: 115.0 pounds
Effect on Balance: 100,740 inch-pounds
Effect on Performance: None

Enclosure to CCP No. 104-B



OPTIONAL
STURDINESS
STEP
(SEE TWA CCP # 228)

CONTINUE ON 52" SEAT

COVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL --- Dtd ---

CHANGE NO: 103

MODEL: (880) 221

TITLE: "Basic T" Instrument Arrangement For The Pilot and Co-Pilot's Panel and Miscellaneous Corrections

ORIGIN: In accordance with CAR Amendment 4B-7

REASON FOR CHANGE: To comply with CAR Amendment 4B-7.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	
Negligible	Negligible	None Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY:

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,142 Dtd 7 October 1957

CHANGE NO: 102A

MODEL: (880) 22-1

TITLE: Emergency Speed Brake Control, Installation of		
ORIGIN: Verbal request by W. H. Spannuth of TWA on 1 October 1957; and TWA Letter No. 880-407 dated 26 November 1957.		
REASON FOR CHANGE: Customer requested; and revision to CCP No. 102.		
	EFFECT ON WEIGHT *	EFFECT ON BALANCE *
Guar. Wt. Empty +12.0 lbs	Oper. Wt. Empty +12.0 lbs	+2,513 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *	None
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* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:	AIRPLANES AFFECTED:
----------------------------	---------------------

SPECIAL PROVISIONS:	EFFECT ON PRICE PER AIRPLANE: Recurring: _____ Non-Recurring: _____ Total: _____
---------------------	---

ACCEPTED:	CONVAIR, A Div. of Gen. Dyn. Corp.
BY:	Chief of Contract Administration Commercial
DATE:	

CONVAIR: SD

Hughes Tool Company
Change No. 102A

Page 1 of 2

Title: Emergency Speed Brake Control, Installation of

Origin: Verbal request by W. H. Spannuth of TWA on 1 October 1957;
and TWA Letter No. 880-407 dated 26 November 1957.

Reason for Change: Customer requested; and revision to CCP No. 102.

Description of Change:

Page 19, Paragraph 3.4.2 DESIGN SPEEDS:

Change sixth line as follows:

From: "Design Speed (main landing gear extended) 320 K or $M = 0.83^*$ "

To: "Design Speed (main landing gear extended) 375 K or $M = 0.89^*$ "

Page 23, Paragraph 3.5.4.4 LANDING GEAR:

Revise paragraph to read as follows:

"The main landing gear shall be designed for extension at speeds up to 375 knots (EAS) or $M = 0.89$ for use as drag increasing devices. The nose landing gear shall be designed for extension at speeds up to 320 knots (EAS) or $M = 0.83$ for use as an additional drag device."

Page 32, Paragraph 3.8.1 GENERAL DESCRIPTION AND COMPONENTS:

Delete the last sentence in paragraph and substitute the following:

"The main landing gear shall be designed for extension speeds up to 375 knots (EAS), for use as drag increasing devices."

Page 32, Paragraph 3.8.1.2 CONTROLS:

Revise the paragraph to read as follows:

"The landing gear shall be operated by actuation of one control lever for all normal extension and retraction functions. A separate aft motion shall be required before the lever can be moved up or down from any position. Operating loads shall be satisfactory for actuation. The landing gear control lever shall remain in the down position at all times the landing gear is down. A solenoid lock shall

be provided to ensure that the landing gear control lever cannot be inadvertently raised from the down position while the airplane is resting on the landing gear. A manual override lever shall be provided to overcome the solenoid lock and to sound the warning horn when the override lever is moved. In the event of a failure of the normal system, release of the landing gear and door mechanisms shall be accomplished by means of a manual cable system controllable from the cockpit. This system shall be completely isolated from the normal system to prevent any single failure from rendering both systems inoperative.

The landing gear control lever shall automatically be locked in the down position as soon as the landing gear makes initial contact with the ground through ground safety switches installed on the landing gear left hand shock strut. The control lever shall remain locked in the down position until the left hand shock strut is extended, and at least three throttles are opened to a position approximately equivalent to that required to obtain the engine thrust necessary to sustain flight. An over-center spring and a cam shall preclude the possibility of the lever not reaching the full up or down position and locking. Further protection is provided by a switch which illuminates the landing gear warning light (par. 3.8.1.3) whenever the gear is down without the handle being locked mechanically in the down position. The landing gear lever shall have adequate travel to clearly indicate, to both pilots, the position of the lever.

The main landing gear can be extended as a speed brake by means of a separate main landing gear speed brake control lever in the cockpit. This lever shall be separate from the normal landing gear lever, and separate from the normal speed brake lever. It shall be impossible to raise the main landing gear by this lever whenever the main landing gear control lever is in the down position."

Effect on Weight Empty: +12.0 pounds
Effect on Balance: +2,513 inch-pounds
Effect on Performance: None

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPC# SD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,141 Dtd 11 October 1957

CHANGE NO: 101B

MODEL: (380) 22-1

TITLE: Emergency Brake System, Revision to

URGENT: Verbal request of W.H. Spannuth of TWA to B.J. Simons on 5
September 1957, and meeting in Kansas City on 20-22 November 1957
between TWA and Convair representatives.

REASON FOR CHANGE:

Customer requested, and revision to CCP No. 101A to show correct
capacity of air bottle

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Quar. Wt. Empty -5.0 lbs	Oper. Wt. Empty -5.0 lbs	-4,236	Inch-lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 101B

Page 1 of 2

Title: Emergency Brake System, Revision to

Origin: Verbal request of W. J. Spannuth of TWA to B. J. Simons on 5 September 1957, and meeting in Kansas City on 20-22 November 1957 between TWA and Convair representatives.

Reason for Change: Customer requested, and revision to CCP No. 101A to show correct capacity of air bottle.

Description of Change:

Page 34, Paragraph 3.8 ALIGHTING GEAR:

Add the following new subparagraph to the page:

"3.8.2.2.1 EMERGENCY BRAKING: A separate air source, manually controlled by the pilot, shall be installed to provide emergency braking in the event of failure of the hydraulic brake system. The emergency brake system shall incorporate a 0-1000-lb direct reading pressure gage in the main air line downstream of the air brake valve. The gage line shall be provided with one gage saver. The emergency brake system shall be effective on the main landing gear wheels only."

Page 58, Paragraph 3.14.1.5 MISCELLANEOUS INSTRUMENTS:

Add the following new item to instrument list:

"One indicator, brake pneumatic pressure, 2-3/8", 0-1000 lbs."

Page 64, Paragraph 3.15.1.11 BRAKE SYSTEM:

Delete the second sentence: "(Emergency operation of the brakes shall be.....)"

Revise the last sentence in paragraph to read as follows:

"The metering valves shall be controlled by a single cable system from the brake pedals".

CONVAIR: S.D.

Hughes Tool Company
Change No. 103

Title: "Basic T" Instrument Arrangement For The Pilot and Co-Pilot's Panel and Miscellaneous Corrections

Origin: In accordance with CAR Amendment 4B-7.

Reason for Change: To comply with CAR Amendment 4B-7.

Description of Change:

Delete present illustration Figure 3.14-1 and replace with revised attached illustration Figure 3.14-1.

Page A10, APPENDIX I-C, INSTRUMENTS AND RELATED EQUIPMENT:

Delete the seventh and eighth items in the Equipment List as follows:

"1	Computer Selector Switch	Kollsman
1	Warning Light	Convair"

NOTE: (Not to be included in Specification language.)

1. The Bendix integrated flight system sensitivity switch and pitch trim knob have been added to the instrument panel to bring it up to date.
2. The airspeed electrical warning light has been replaced by Kollsman with an electrical fail indicating flag built into the airspeed instrument.
3. The air data computer selector switch has been deleted from Appendix I-C since Convair shall supply switching "As Required" to provide satisfactory operation of the KIFIS system .
4. A guarded landing gear down lock override button has been added to the diagram for clarity as shown in the Mock-Up. The landing gear handle system is such that the gear cannot be inadvertently raised on the ground. If in flight, should a malfunction of the ground protection system occur, the manual override will allow raising of the handle to retract the gear.

Effect on Weight Empty: Negligible

Effect on Balance: None

Effect on Performance: None

CONVAIR: SD

Hughes Tool Company
Change No. 101B

Page 2 of 2

Page A8, APPENDIX I-C, INSTRUMENTS AND RELATED EQUIPMENT:

Add the following new items to the Description list:

"One indicator, brake pneumatic pressure, 2-3/8", 0-1000 lbs.

One air bottle, 3000 psi, 400 cubic inch capacity (with pressure gage)"

Figure: 3.15-1 HYDRAULIC SYSTEM:

Revise figure to reflect above changes.

Effect on Weight Empty:	-5.0 pounds
Effect on Balance:	-4,236 inch-pounds
Effect on Performance:	None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,191 Dtd 10 February 1958

CHANGE NO: 100

MODEL: (880) 22-1

TITLE: Vickers Hydraulic Pumps, Installation of

ORIGIN: TWA requested, References: TWA TWX dated 14 October 1957, and
TWA TWX dated 7 February 1958.

REASON FOR CHANGE: Customer requested.

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty		
+29.0 lbs	+29.0 lbs	+21,750	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 100

Title: Vickers Hydraulic Pumps, Installation of

Origin: TWA requested, References: TWA TWX dated 14 October 1957,
and TWA TWX dated 7 February 1958.

Reason for Change: Customer requested.

Description of Change:

Page All, APPENDIX I-C, HYDRAULIC EQUIPMENT:

Change fifth item in Description List as follows:

From: "4 - Main System Pumps Ham. Standard 521415"
(variable displacement type)

To: "4 - Main System Pumps Vickers Model 3913"
(variable displacement type)

Effect on Weight Empty: +29.0 pounds
Effect on Balance: +21,750 inch-pounds
Effect on Performance: None

TWA - Change No. 100-

(Cancelled)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

NCL 10,135 Dtd 17 September 1957

CHANGE NO: 99A

MODEL: (880) 22-1

TITLE: 15-Ampere Electrical Receptacle, Installation of

ORIGIN: Reference: TWA Letter Nos. 880S-15, dated 13 September 1957,
and 880S-43, dated 4 November 1957

REASON FOR CHANGE: Customer requested; and revision to CCP No. 99

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
+1.0 lb	+1.0 lb	+700	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 104B

Page 5 of 5

PROPOSAL "D"

Same as Proposal "A" except add the following to the end of paragraph
3.19.1.1.5 PASSENGER SEATS:

"The following shall be provided: wide outside arms and hydraulic
recline locks."

Page A-15, APPENDIX I-C, FURNISHINGS:

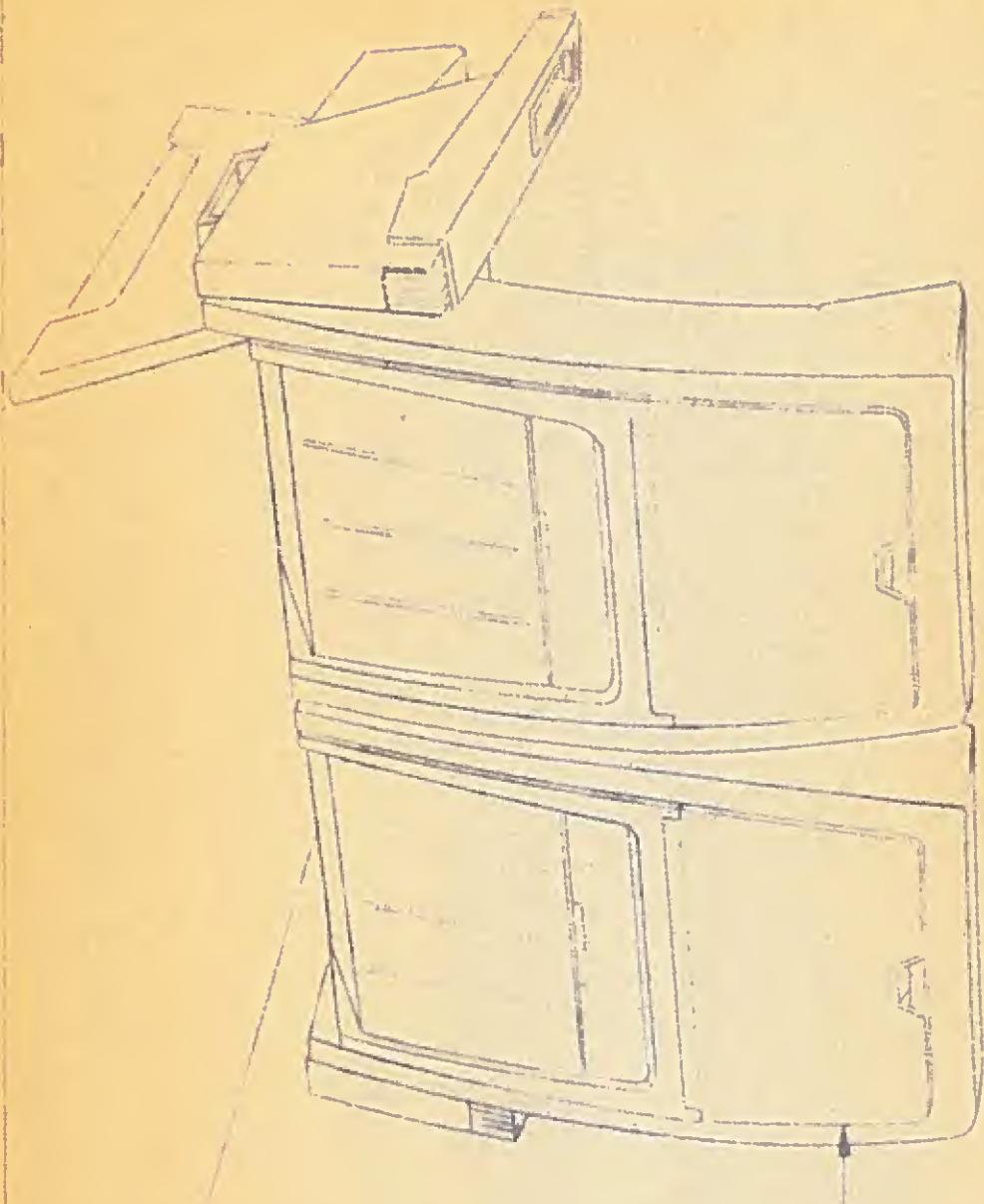
Change 22nd item as follows:

To: *"36 Double Passenger Seats (Including
fabric and belt)

1,969 lb"

Effect on Weight Empty: +140.0 pounds
Effect on Balance: +122,640 inch-pounds
Effect on Performance: None

Enclosure to CCP No. 104B



CONVAIR 880 52" SEAT

CONVAL: SD

Hughes Tool Company
Change No. 99A

Title: 15-Ampere Electrical Receptacle, Installation of

Origin: TWA Letter Nos. 8803-15, dated 13 September 1957 and 8803-43,
dated 4 November 1957

Reason for Change: Customer requested; and revision to CCP No. 99

Description of Change:

Page 79, Paragraph 3.16.10.8 LOADING RAMP RECEPTACLES:

Revise the paragraph as follows:

"External direct-current power receptacles shall be installed, one each, at both passenger loading doors to furnish a maximum of 15 amperes to the loading ramp. The receptacles shall be accessible from the loading ramp. Voltage drop at rear entrance door shall not exceed 2.8 volts."

Effect on Weight Empty: +1.0 pounds
Effect on Balance: +700 inch-pounds
Effect on Performance: None

TWA - Change No. 99

(Rejected)

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: 880-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL None DTD _____

CHANGE NO: 98

MODEL: (880) 22-1

TITLE: Revised Description of Windshield Rain Removal System

ORIGIN: TWA Request, Reference: Meeting of 29 August 1957 between
TWA and Convair representatives.

REASON FOR CHANGE: To clarify and correct intent of specification.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	0 Inch/lb.
0	0	0 Inch/lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

OPTIONAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAVR, A Div. of Gen. Dyn. Corp.

BY: _____

Chief of Contract Administration
Commercial

DATE: _____



CONVAIR: SD

Hughes Tool Company
Change No. 98

Title: Revised Description of Windshield Rain Removal System

Origin: TWA Request, Reference: Meeting of 29 August 1957 between
TWA and Convair representatives.

Reason for Change: To clarify and correct intent of specification.

Description of Change:

Page 28, Paragraph 3.7.1.3.2.2 - RAIN REMOVAL:

Delete second and third sentences and substitute the following:

"Removal of rain shall be accomplished by airblast. This system shall utilize engine bleed air directed at high velocity across the pilot's and copilot's forward windshield panels. Adequate protection from the hot air blast shall be provided for these windshield panels. Rain will be cleared during all phases of operation including taxi. Heavy rain conditions during taxiing may require any one engine being operated at not more than 5% RPM above idle."

Effect on Weight Empty: 0
Effect on Balance: 0
Effect on Performance: None

CONVAIR

A Division of General Dynamics Corporation
SAN DIEGO, CALIFORNIA

COMMERCIAL CHANGE PROPOSAL

SPEC NO. 7D-22-002

DATE:

CUSTOMER Hughes Tool Company

MCL 10,137 DTD 26 September 1957

CHANGE NO. 97B

MODEL (880) 22-1

TITLE: Integral Folding Food Trays, Installation of

TWA Mock-Up Review Comments dated 15 July 1957, and Customer
Comments during Color Module Review on 9 May 1958

REASON FOR CHANGE. Customer request, and revision to CCP No. 97A

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
OPER. WT. EMPTY	#148.0 lb		
#148.0 lb		#136,728	INCH LB.

EFFECT ON GUARANTEED PERFORMANCE: *

None

ALL FUTURE CHANGES WILL BE ACCUMULATED AND TOTALS REFLECTED IN A FUTURE CHANGE PROPOSAL	ACCEP-
ANCE OF THIS CHANGE IS DEPENDENT UPON PRIOR ACCEPTANCE OF THE FOLLOWING CHANGES	

ENGINEERING APPROVAL

LATEST DATE OF ACCEPTANCE:	AIRPLANES AFFECTED:

OPTIONAL PROVISIONS:	EFFECT ON PRICE PER AIRPLANE:
	RECURRING:
	NON-RECURRING:
	TOTAL:

CONVAIR, A DIVISION OF GENERAL DYNAMICS CORP.

CONVAIR: SD

Hughes Tool Company
Change No. 97B

Page 1 of 2

Title: Integral Folding Food Trays, Installation of

Origin: TWA Mock-Up Review Comments dated 15 July 1957, and Customer
Comments during Color Module Review on 9 May 1958

Reason for Change: Customer request, and revision to CCP No. 97A

Description of Change:

Page 106, Paragraph 3.19.1.1.5 PASSENGER SEATS:

Revise the fifth sentence as follows:

From: "Food tray provisions and literature pockets shall be
provided on and/or adjacent to each seat".

To: "Integral folding food trays shall be installed in the main
passenger compartment seat backs, excluding the last row of
seats which shall receive provisions only. Four plug-in type
food trays shall be provided for the front row seat passengers
in the main passenger compartment. Four plug-in type food
trays shall be provided as loose equipment for use behind the
movable coat dividers. In addition to the integral food trays,
two main passenger compartment seat rows shall include recep-
tacles for plug-in type food trays for use behind the forward
main cabin partition and the movable coat divider. All cabin
seats shall contain internal provisions for the future instal-
lation of plug-in receptacles (the receptacles for these seats
shall be provided with the seats as loose equipment). Litera-
ture pockets shall be installed on the main cabin forward
partition, aft face of movable coat dividers and directly below
food trays in the seat backs. No food trays shall be provided
on the aft face of the movable coat stowages".

Page 129, Paragraph 3.23.2 EQUIPMENT INTERCHANGEABILITY:

Add under Item 2 - Interchangeability Without Alterations:

An asterisk before *Passenger Seat Assembly

Add the following note to the bottom of the page:

"*NOTE: The aft row of seats shall include food tray provisions only".

CONVAIR: SD

Hughes Tool Company
Change No. 97B

Page 2 of 2

Page A15, APPENDIX I-C, FURNISHINGS:

Revise the 21st item in list as follows:

<u>From:</u>	"80 Passenger Trays (Stowed in Seat Pocket)	160.0 lb"
<u>To:</u>	"68 Integral Folding Food Trays (Installed on passenger seats, excluding aft row of seats)	296.0 lb
4	Plug-in Type Food Trays (for front row seats, cabin area)	9.0 lb
4	Plug-in Type Food Trays (for use behind coat divider, loose equipment)	(No weight empty)"

The following shall not appear in the Specification language:

See CCP No. 170, Cabin Interior Modification and 12-Place Club
Area, for 12 additional plug-in type food trays to be used in
the club area.

Effect on Weight Empty: ~~148.0~~ pounds
Effect on Balance: ~~136,728~~ inch-pounds
Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPCC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,136 Dtd 26 September 1957

CHANGE NO: 96

MODEL: (880) 22-1

CHANGE: Fuel Quantity System - Counter-Pointer Indicators, Revision of

ORIGIN: Customer requested, Ref.: Meeting between Customer and Contractor representatives in Kansas City dated 3 September 1957.

REASON FOR CHANGE:

To provide counter-pointer indicators in lieu of dial pointer indicators.

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty

Oper. Wt. Empty

0

0

0 Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Ineligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPCIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 96

Title: Fuel Quantity System - Counter-Point Indicator, Revision of
Origin: Customer requested, Ref.: Meeting between Customer and Con-
tractor representatives in Kansas
City dated 3 September 1957

Reason for Change: To provide counter pointer indicators in lieu of
dial pointer indicators.

Description of Change:

Page A10, APPENDIX I-C, Instruments and Related Equipment:

Change the eighteenth item in the equipment list:

From: AR Fuel Quantity Indicators

To:	2 Fuel Quantity Indicators	Simmonds	383053-01581	5
	2 Fuel Quantity Indicators	Simmonds	383053-01582	5

Effect on Weight Empty: None
Effect on Balance: None
Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

REF ID: 30-72-002

DATE:

CONTRACTOR: Hughes Tool Company

MCN 10,127 Dtd 21 August 1957

CHARGE NO: 95A

MODEL: (880) 22-1

ITEM: Clock Installation on Flight Engineer's Panel

Customer requested, Ref.: TWA Letter No. 880-271 dated 15
August 1957

DETAIL OF CHANGE: To provide a clock for the flight engineer's use,
and Revision to CCP 95

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Oper. Wt. Empty			
Negligible	Negligible	Negligible	Inch Lb.

DETAIL OF GUARANTEED PERFORMANCE: *

None

* Permissible Changes Will be Accumulated and
Will be reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

MANUFACTURER:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

TYPE:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

Conair: S. D.

Hughes Tool Company
Change No. 99A
Page 1 of 1

Title: Clock Installation on Flight Engineer's Panel.

Origin: Customer requested, Ref.: TWA Letter No. 880-271 dated 15
August 1957

Reason for Change: To provide a clock for the flight engineer's use, and
Revision to CCP 95

Description of Change:

Page 57, Paragraph 3.14.1.4 FLIGHT ENGINEER'S INSTRUMENTS:

Add the following to list of equipment:

"One clock"

Page A8, APPENDIX I-C, INSTRUMENTS AND RELATED EQUIPMENT:

Change the first item in the equipment list:

From: 2 Clocks

To: 3 Clocks Elgin 2153W GRD 690

Effect on Weight Empty: Negligible

Effect on Balance: Negligible

Effect on Performance: None

TWA - Change No. 94

(Expired)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

CONVIAIR CHANGES TO PROPOSAL

PROPOSAL NO. 2

DATE: _____

Hughes Tool Company

MCN: _____ 94d _____

REV: 93

MODEL: (880) 22-1

DELETION OF CUSTOMS SEAL PROVISIONS IN CARGO DOORS

INITIATOR: Contractor Initiated

TYPE OF CHANGE: Administrative Specification Change

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Per. Wt. Empty	Oper. Wt. Empty	0	Inch 10.
0	0	0	

GUARANTEED PERFORMANCE: * None

Accumulative Changes Will be Accumulated and
Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

POSITIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

CONVIAIR, A Div. of Gen. Dyn. Corp.

W. Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 93

Title: Deletion of Customs Seal Provisions in Cargo Doors

Origin: Contractor Initiated

Reason for Change: Administrative Specification Change

Description of Change:

Page 30, Paragraph 3.7.1.5.4 - CARGO DOORS:

Delete fourth sentence, starting on fifth line "(Provisions shall be made to permit cargo doors to be sealed for customs)"

Effect on Weight Empty: 0

Effect on Balance: 0

Effect on Performance: None

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO, CALIFORNIA

COMMERCIAL CHANGE PROPOSAL

SPEC NO.. ZD-22-002

DATE:

Revised

CUSTOMER: Hughes Tool Company

MCL 10,117

DTD 17 December 1965

CHANGE NO. 91C

MODEL: 22-1 (Convair "880")

TITLE: VGH Recorders, Installation of

ORIGIN: NACA request to install subject equipment.

REASON FOR CHANGE: As above.

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

GUAR. WT. EMPTY

OPER. WT. EMPTY

See note on second sheet.

INCH L.B.

EFFECT ON GUARANTEED PERFORMANCE: * None

* NEGLIGIBLE CHANGES WILL BE ACCUMULATED AND
TOTALS REFLECTED IN A FUTURE CHANGE PROPOSALACCEPTANCE OF THIS CHANGE IS DEPENDENT UPON
PRIOR ACCEPTANCE OF THE FOLLOWING CHANGES:K.V. Shaw 3/7/60
R. McCorvel

ENGINEERING APPROVAL

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE

RECURRING:

NON-RECURRING:

TOTAL.

ACCEPTED:

CONVAIR, A DIVISION OF GENERAL DYNAMICS CORP.

BY:

DATE:

CONVAIR: SD

Hughes Tool Company
Change No. 91C

Title: VGH Recorders, Installation of

Origin: NACA request to install subject equipment

Reason for Change: As above.

Description of Change:

Page 61 Cont., Paragraph 3.14.3.9 VGH RECORDING PROVISIONS:

Revise the paragraph and paragraph title to read as follows:

"VGH RECORDER: One VGH recorder shall be installed on each of two airplanes* to record research data for gust studies. The recorder shall be installed on the autopilot rack, and its acceleration transmitter on the floor beam in the rear spar area. The installation shall include the mountings, aluminum tubing from the copilot's static line and the pitot line to the recorder, circuit breaker, nameplate and the necessary wiring."

In the single asterisk note on bottom of Page 61 Cont., delete the word "provisions".

Not to be a part of the Specification language:

The following weight effect shall be subtracted from the as weighed figures when considering guaranteed weight of the airplanes and is not to be included in the accumulative specification weight figures.

Effect on Weight: +20.0 pounds
Effect on Balance: +8,334 inch-pounds
Effect on Performance: None

CONVAC, INC.
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SP-80-106-880-106-04-2

DATE: _____

Customer: Hughes Tool Company

MCL 10,120 Std _____

Change No. 90

MODEL: (880) 22-1

ITEM: Cockpit Temperature Bulb and Indicator, Removal of

REASON: Customer Requested, Reference: TWA Letter No. 880-106 dated 28 March 1957

REASON FOR CHANGE: To remove instrument which is considered nonessential in the cockpit area.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	
-1.8 lb	-1.8 lb	-472 Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE: AIRPLANES AFFECTED:

EFFECTIVE PROVISIONS: EFFECT ON PRICE PER AIRPLANE:
Recurring: _____
Non-Recurring: _____
Total: _____

CONVAC, A Div. of Gen. Dyn. Corp.

BY: _____
Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 90

Title: Cockpit Temperature Bulb and Indicator, Removal of

Origin: Customer Requested, Reference: TWA Letter No. 880-106 dated
28 March 1957

Reason for Change: To remove instrument which is considered nonessential
in the cockpit area.

Description of Change:

Page 58, Paragraph 3.14.1.5 - INSTRUMENTS AND NAVIGATIONAL EQUIPMENT:

Delete: The seventh line from instrument list as follows:
"(One cockpit temperature indicator)"

Page A-10, APPENDIX I-C - INSTRUMENTS AND RELATED EQUIPMENT

Delete: The twenty-sixth line from the equipment list as follows:
1 Cockpit Temperature Indicator

Effect on Weight Empty: -1.8 pounds
Effect on Balance: -472 inch-pounds
Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,131 Ptd _____

CHANGE NO: 89A

MODEL: (880) 22-1

TITLE: **Fuses, Increase in Spares of**

ORIGIN: **Contractor initiated**

REASON FOR CHANGE: **To comply with CAR regulation on percentage of spare fuses to be provided, and revision to CCP No. 89**

EFFECT ON WEIGHT * _____

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty	
Negligible	Negligible	Negligible Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 89A

Title: Fuses, Increase in Spares of

Origin: Contractor initiated

Reason for Change: To comply with CAR regulations on percentage of
spare fuses to be provided, and revision to CCP No. 89

Description of Change:

Page 71, Paragraph 3.16.7.1.2 - FUSES:

Revise first sentence of second paragraph to read as follows:

"Fuses of same rating exceeding 12 or more per airplane shall be
provided with a minimum of 12 fuses or a minimum of 50 percent
(whichever is greater) spares."

Effect on Weight Empty: Negligible
Effect on Balance: Negligible
Effect on Performance: None

TWA- Change - Re. 88-A
(Cancelled)

File

CONVATR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPC NO: 80-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,129 Dtd _____

CHANGE NO: 88

MODEL: (880) 22-1

TYPE: Skydrol Hydraulic Fluid, Use of

ORIGIN: Reference: TWA Letter 880-232 dated 23 July 1957

REASON FOR CHANGE: Customer requested.

EFFECT ON WEIGHT *		EFFECT ON BALANCE
Guar. Wt. Empty	Oper. Wt. Empty	
+204 lb	+204 lb	+180,140 Inch-lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

EXCEPDED:

CONVATR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAL: SD

Hughes Tool Company
Change No. 88

Page 1 of 2

Title: Skydrol Hydraulic Fluid, Use of

Origin: Reference: TWA Letter 880-232 dated 23 July 1957

Reason for Change: Customer requested.

Description of Change:

Page 18, Paragraph 3.2.4.1 - DETAIL STRUCTURAL FINISH:

Add the following subparagraph:

"h. Surfaces, equipment and components likely to be exposed to the hydraulic fluid specified in paragraph 3.15.1.2 shall be suitably protected against the action of this fluid."

Page 62, Paragraph 3.15.1.2 - FLUID:

Revise paragraph as follows:

"The hydraulic systems shall be designed to function with a hydraulic fluid conforming to "Skydrol 500"."

Paragraph 3.15.1.3 - PACKING AND SEALS:

Revise paragraph as follows:

"All packing, seals, gaskets and cups, in the hydraulic systems, shall be of materials suitable for use with the specified hydraulic fluid and shall, in general, be Teflon, AN Types or equivalent."

Paragraph 3.15.1.4 - LINES:

Add the following to the end of the paragraph:

"Drip pans or shrouds shall be installed in the nose wheel area and in the aft fuselage area aft of the pressure bulkhead, as required, to contain the fluid during repair of the hydraulic system."

Page 68, Paragraph 3.16.5.5 - WIRE PROTECTION:

Add the following sentence to the end of paragraph:

"Any wiring likely to be exposed to the hydraulic fluid specified in paragraph 3.15.1.2 shall have suitable resistance to such fluid."

Page 79, Paragraph 3.16.10.7 - PLUGS AND RECEPTACLES:

Add the following sentence to the end of paragraph:

"Plugs and receptacles likely to be exposed to the hydraulic fluid specified in paragraph 3.15.1.2 shall be fabricated of material resistant to the action of this fluid."

Effect on Weight Empty: +204 pounds
Effect on Balance: +180,140 inch-pounds
Effect on Performance: None

TWA - Change No. 87
(Rejected)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: Revised 11-1-57

CUSTOMER: Hughes Tool Company

MCL 10,126 Dtd 9-10-57

CHANGE NO: 86A

MODEL: (880) 22-1

TITLE: Electronic Panels, Change of

ORIGIN: Reference: TWA TWX dated 7 October 1957

REASON FOR CHANGE: Customer requested; and revision to CCP No. 86

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
Negligible	Negligible	Negligible	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

Chief of Contract Administration
Commercial

DATE: _____

COPIER: SD

Hughes Tool Company
Change No. 86A

Title: Electronics Panel, Change of

Origin: Reference: IWA 1WX dated 7 October 1957

Reason for Change: Customer requested; and revision to CCP No. 86

Description of Change:

Page 90, Paragraph 3.17.1.1 CONTROL PANELS

Delete the following second and third items in Description List:

"Dual VHF Communication Control.

"Dual VHF Navigation (Including ILS, DME and Marker Beacon Controls)"

Add the following item to the Description List:

"VHF Communications/VOR - Including ILS and DME" (2 required)"

Page A7, APPENDIX I-C, ELECTRONIC EQUIPMENT:

Delete the following first and third items under "CONTROL PANELS"

"1 VHF Nav. (ILS, Marker Beacon) (Dual)

1 VHF Comm. (Dual)"

Add the following item under "CONTROL PANELS"

"2 VHF/VOR (ILS, DME) Electronics Equipt Engr. Inc. Model 261"

Change the second item under "CONTROL PANELS" as follows:

From: "1 HF Comm. (Dual)"

To: "1 HF Comm. (Dual) Electronic Equipt Engr. Inc. Model 262"

Effect on Weight Empty: Negligible

Effect on Balance: Negligible

Effect on Performance: None

TWA - Change no. 86

(Rejected)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

Change No.: 080-22-002

DATE: _____

Customer: Hughes Tool Company

NCL 10,130 Ptd _____

Change No.: 85

MODEL: (80) 22-1

REASON: Teleflex Controls in Pods and Pylons, Use of

INITIATOR: Contractor initiated.

REASON FOR CHANGE: Administrative specification change. (See attached Exhibit "A".)

EFFECT ON WEIGHT*		EFFECT ON BALANCE*	
Init. Wt. Empty	Oper. Wt. Empty	0	Inch/lb.
0	0	0	

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE: AIRPLANES AFFECTED:

SPECIAL PROVISIONS: EFFECT ON PRICE PER AIRPLANE:
Recurring: _____
Non-Recurring: _____
Total: _____

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____
Chief of Contract Administration
(Commercial)

CONVAIR: 5D

Hughes Tool Company
Change No. 85

Title: Teleflex Controls in Pods and Pylons, Use of

Origin: Contractor initiated.

Reason for Change: Administrative specification change.

Description of Change:

Page 54, Paragraph 3.12.11.2 - GENERAL CONTROLS:

Delete the first sentence and add the following item to list of propulsion system controls:

"Fuel shut-off control"

Page 54, Paragraph 3.12.11.2.1 - ENGINE CONTROLS:

Change paragraph title as follows:

From: ENGINE CONTROLS

To: ENGINE POWER CONTROLS

Page 55, Paragraph 3.12.11.2.1 - Power control lever.

Delete the first two sentences from top of page and substitute the following:

"Push-pull rods and cranks from pedestal to compartment below cockpit floor, closed cable system to pylon, and push-pull cable (Teleflex type) to engine control. Provisions shall be made to prevent the power control from creeping in flight."

Effect on Weight Empty: 0

Effect on Balance: 0

Effect on Performance: None

EXHIBIT "A"

In the preliminary design stage, a study of the engine controls was made by Convair Engineering Controls Design Group to evaluate push-pull rods and cranks, with cables, and teleflex cable with torque boxes. The three means of mechanical transmission are always considered as equivalent or alternate methods, each has its own peculiar set of limitations and Convair wishes to briefly cover the reasoning for selecting teleflex components in the pod and pylon areas only:

1. Weight Comparison

Indications from the design studies are that the Teleflex system will show no weight increase compared to a cable or push pull rod system when completely worked out to a satisfactory configuration

2. No Engine Heat Growth Effect

The -40°F to $+350^{\circ}\text{F}$ realistic temp. change from engine heat will not affect Teleflex components but will vary engine control input shaft location by .25+ fwd .02 outboard and .08 down. It would change geometry of cranks and rods by approximately 10% thrust equivalent. The temp. change would cause extreme rig tension variation in a cable system and maintaining proper tension would be difficult and unreliable in these areas.

3. No Engine Shaft Sideloads would be imposed with Teleflex torque box. The alternate methods would impose side loads on the engine shaft (limited to 1# max.) unless compensated for by torque tubes with flex bellow drives, U-joints or other means. These are costly and heavy and/or subject to fatigue and lost motion problems.

4. Sensitive Engine Control will be possible by 0° $10'$ adjustments for desired cruise or increments of .31% thrust as teleflex torque box keeps geometry constant, travels constant, and mechanical advantages constant. All cockpit levers will be in exactly same position at all times. This is not possible with manufacturing variations in crank supports affecting geometry plus the loss in travel due to rise and fall as well as peaking loads at the critical end travels such as 108% thrust and 100% thrust reverse. The 125° engine shaft rotation exceeds practical limits of any rod and crank mechanism but is ideal for Teleflex.

5. Quick Engine Change is accomplished with Teleflex through a quick disconnect above the engine. Remove a cotter pin, push up spring loaded assembly cover and twist to lock open. This will separate conduit, exposing cable splice thus a one minute time operation for breaking engine controls.

6. Safety is built in by Teleflex components being free from jamming or contamination by foreign objects like loose tubing, dust, oil, etc. Less clearance is required for Teleflex installations since it is not subject to fouling as are other methods.

CONVAIR: SD

7. Quick and Accurate Rigging is accomplished through a rigging pin inserted into driving arm attached to control shaft and through to engine holding idle rig position positive. Fine adjustment is easily possible by micro adjustment and back up plate. The pylon box and quadrant have rigging pin provisions.
8. Access is simplified by routing tubing .343 O.D. for easy installation, sealing, structural modifications and inspection thus allowing best space utilization with other components and functions, this is definitely a reliability improvement.
9. Durability is accomplished by use of teflon lined conduit, it has an .030 wall inner teflon lining in a .030 wall, stainless steel conduit. It has been tested and approved above 450°F and is 97% efficient. The total number of degrees of bend and load are its limiting factors. The conduit normally survives filings, grit, freezing, oil and abuse by service crews without increasing friction. The torque on engine is 11# max. and our installation has 212° total bend. These conditions are ideal for Teleflex. No servicing will be required for conduit cable, or torque boxes.
10. Cockpit Loads Lowered. A 4# max. handle load at 108% thrust condition will be worst condition and normally an approximate 3.# operating load with breakout load of 3.2#, assures pilot of ease in manipulation of power settings to desired position with finger motion.

NOTE: 1. The tension regulator on airplane front spar will hold this position constant through temperature changes of airplanes and wing flexing.
11. Fatigue. The torque box is an engine build up accessory and rigidly mounted. The conduit clips are located to not build up stresses due to heat growth and vibration. The pylon torque box will be mounted on primary structure. Parts are designed to 183 cps, +3.75 G and -1.50 G loads, plus 100# ult. handle loads which equals 297# ult. tension and compression on teleflex. This is only 62% of its limit load.

NOTE: Cantilevered supports off of engine build up, plus added crank arms and rods could fatigue even the best designed alternate mechanism and transmission during a long service life.
12. Past Experience: Convair is at present using teleflex on power controls as well as drag chute, emergency hydraulic valve and emergency landing gear valve without any objections. General Electric is using Teleflex on several CJ805-1 and CJ805-3 engine components and have designed from the start for the power controls to be teleflex actuated, providing mating face mountings holes and inserts for torque box attachment of power controls and fuel shutoff controls. G.E. has approved of 880 power control systems.
13. No Bob Weight will be encountered with the teleflex, but with rods .8# and cranks .3# an additional static and dynamic weight will have to oppose the +3.75 G and -1.50 G loads. Otherwise this weight could change engine setting by 5% thrust.

CONVAIR: SD

14. Handle Deflection is approximately $\pm 1^\circ$ or $\pm 1.22^\circ$ max. at 225% handle operating load at max. torque load in 108% thrust position or ± 1.82 including anti-creep mechanism.
15. Identical Hardware in four pods and pylons.
16. Summary: The use of Teleflex Teflon lined conduit and torque boxes in Engine Controls as equivalent or alternate to Rods and Cranks or Cables and Pulleys will satisfy all Convair Engineering Controls and Power Plant Design Groups, and General Electric Controls and Engine Requirements of:

No weight increase
No engine heat growth effect
No engine shaft sideloads
Sensitive engine control
Quick engine change
Safety
Quick and accurate rigging
Accessability
Durability
Low cockpit loads
Fatigue
Past Experience
No bob weight
Lower handle deflection
Identical hardware

The most important of all requirements is a direct result of all of above factors which is, long service-free life, to give the 880 the best engine controls in the industry.

TWA- Change No. 84
(Cancelled)

A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

PROJ. NO.: ED-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,115 Dtd 31 July 1957

CHANGE NO.: 83A

MODEL: (880) 22-1

ITEM: Selective Calling System, Installation of

REASON: Customer Requested, Reference: TWA TWX dated 23 July 1957

REASON FOR CHANGE: Customer request for actual installation of electronic equipment in lieu of provisions only, and Revision to CCP 83

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Gross. Wt. Empty	Oper. Wt. Empty		
+12.3 lb	+12.3 lb	+3582	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

No. 70A

Engineering Approval

EX-700 DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

ITEM	EFFECT ON PRICE PER AIRPLANE:
Initial Provisions:	Recurring: _____
	Non-Recurring: _____
	Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

Convair: SD

Hughes Tool Company
Change No. 83A

Page 1 of 2

Title: Selective Calling System, Installation of

Origin: Customer requested. Ref.: TWA TWX dated 23 July 1957

Reason for Change: Customer request for actual installation of electronic equipment in lieu of provisions only.

Description of Change:

Page 89, Paragraph 3.17.1 - EQUIPMENT:

Under Description List:

Add: Dual Channel Airborne Selective Calling System

Under Provisions for the Following System Shall be Made:

Delete: Dual Channel Airborne Selective Calling System.

Page 90, Paragraph 3.17.1.1 - CONTROL PANELS:

Under Description List:

Add: Selective Calling System Control Panel

Under Provisions for the following Radio Control Panel Shall be Made:

Delete: Selective Calling System Control Panel.

Page 101, Paragraph 3.17.2.4 - AIRBORNE SELECTIVE CALLING:

Revise paragraph to read as follows:

A dual channel selective calling unit shall be installed.

Add the following new paragraph:

"3.17.2.4.1 CONTROL: A SelCal panel shall be installed in the radio control panel. A single chime shall be installed and connected to each SelCal channel.

onvalve: SD

Hughes Tool Company
Change No. 83A

Page 2 of 2

age A5, APPENDIX I-C - ELECTRONICS EQUIPMENT

Selective Calling System

1 Dual Channel Airborne Selective
System (including decoder unit
and shock mounted rack)

Collins

455C-1

age A7, APPENDIX I-C - ELECTRONIC EQUIPMENT

Under Control Panels

Change: 1 Selective Calling System

To: 1 Selective Calling System Panel

Gable

G556

ffect on Weight Empty: +12.3 pounds
ffect on Balance: +3582 inch-pounds
ffect on Performance: None

W A T C H
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPRN: 10-22-062

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,121 Ptd. ---

CHANGE NO: 82

MODEL: (880) 22-1

TYPE: Main and Nose Landing Gear Wheel and Tire Size, Change of

ORIGIN: Contractor Initiated.

REASON FOR CHANGE: To make specification language compatible with the only main and nose landing gear wheel and tire sizes available which will meet airplane requirements.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty 0	Oper. Wt. Empty 0	0 Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LIATEST DATE OF ACCEPTANCE: AIRPLANES AFE CTB:

FINANCIAL PROVISIONS: EFFECT ON PRICE PER AIRPLANE:
Recurring: _____
Non-Recurring: _____
Total: _____

NAME, P.D.: CONVATR, A Div. of Gen. Dyn. Corp.

BY: Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 82

Page 1 of 2

Title: Main and Nose Landing Gear Wheel and Tire Size, Change of

Origin: Contractor Initiated.

Reason for Change: To make specification language compatible with the only main and nose landing gear wheel and tire sizes available which will meet airplane requirements.

Description of Change:

Page 34, Paragraph 3.8.2.2 - WHEELS, BRAKES, AND BRAKE CONTROL SYSTEMS:

Delete the first sentence and substitute the following:

"The wheels and brakes for the main landing wheels shall meet Type VII, 39 x 13 Tire and Rim Association requirements."

Paragraph 3.8.2.3 - TIRES:

Delete the first sentence and substitute the following:

"The tubeless tires for the main landing wheels shall be Type VII, 39 x 13 tires."

Page 35, Paragraph 3.8.4.2 - WHEELS AND BRAKES:

Delete the first sentence and substitute the following:

"The wheels for the nose landing gear shall meet Type VII, 29 x 7.7 Tire and Rim Association requirements."

Paragraph 3.8.4.3 - TIRES:

Delete the first sentence and substitute the following:

"The tubeless tires for the nose landing gear shall be Type VII, 29 x 7.7 tires."

CONVAIR: SD

Hughes Tool Company
Change No. 82

Page 2 of 2

Page A 13, APPENDIX I-C, LANDING GEAR EQUIPMENT:

Change fourth item in Description list as follows:

From: Main Wheel Tires (12.50 x 16) Type III
To: Main Wheel Tires (39 x 13) Type VII

Change seventh item in Description list as follows:

From: Nose Wheel Tires (7.50 x 14) Type III
To: Nose Wheel Tires (29 x 7.7) Type VII

Effect on Weight Empty: 0
Effect on Balance: None
Effect on Performance: None

CONVATR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPCC NO.: 880-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,122 Ptd. ---

CHANGE NO.: 81

MODEL: (880) 22-1

ITEM: Nose Wheel Well Signal Horn, Deletion of

ORIGIN: Reference: TWA Letter No. 880-106 dated 28 March 1957 on Mock-Up Review of 25 - 27 February 1957

REASON FOR CHANGE: Customer requested.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
-1.2 lb	-1.2 lb	-285	Tuch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

RECEIVED:

CONVATR, A Div. of Gen. Dyn. Corp.

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 81

Title: Nose Wheel Well Signal Horn, Deletion of

Origin: Reference: TWA Letter No. 880-106 dated 28 March 1957 on
Mock-Up Review of 25 - 27 February 1957

Reason for Change: Customer requested.

Description of Change:

Page 100, Paragraph 3.17.2.3.5 - SERVICE INTERPHONE:

Delete the sentence starting in third line from top of page:

"(A signal horn in the nose wheel well shall be activated by a
momentary call switch in the cockpit labeled "Wheel Well Horn")."

Effect on Weight Empty: -1.2 pounds

Effect on Balance: -285 inch-pounds

Effect on Performance: None

TWA- Change No. 80
(Cancelled)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL --- Dtd ---

CHANGE NO: 79

MODEL: (880) 22-1

TITLE: Horizontal and Vertical Stabilizer Leading Edges and Stabilizer Assembly; Specification, and Splice Design, Change of

ORIGIN: Contractor initiated.

REASON FOR CHANGE: 1. To clarify intent of specification as regards horizontal and vertical stabilizer leading edges. 2. To change the stabilizer splice design from a bolted side splice to a combination of internal tension splices and external shear splices.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty -12.7 lbs	Oper. Wt. Empty -12.7 lbs	-19,387	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 79

Title: Horizontal and Vertical Stabilizer Leading Edges and Stabilizer Assembly; Specification, and Splice Design, Change of

Origin: Contractor initiated.

Reason for Change: 1. To clarify intent of specification as regards horizontal and vertical stabilizer leading edges.
2. To change the stabilizer splice design from a bolted side splice to a combination of internal tension splices and external shear splices.

Description of Change:

Page 24, Paragraph 3.6.2 - STABILIZER:

Delete third sentence and substitute the following:

"The stabilizer shall be assembled by means of a centerline splice; consisting of a bolted tension type splice at internal members, and external shear type splices at upper and lower surfaces. The shear splices shall utilize Huck lock bolts."

Page 129, Paragraph 3.23.2 - EQUIPMENT INTERCHANGEABILITY:

In subparagraph, "1. Interchangeable Parts"

Add the following items to list:

"Horizontal Stabilizer, Leading Edge
Vertical Stabilizer, Leading Edge".

In subparagraph, "2. Interchangeability Without Alterations"

Delete 11th item: "Horizontal Stabilizer, Complete Assembly".

Page 130, Paragraph 3.23.2 - EQUIPMENT INTERCHANGEABILITY:

In subparagraph, "5. Replaceable Parts"

Delete the following fourth and fifth items from list:

"Horizontal Stabilizer, Leading Edge
Vertical Stabilizer, Leading Edge".

Add the following item to list:

"Horizontal Stabilizer, Complete Assembly".

Effect on Weight Empty: -12.7 pounds

Effect on Balance: -19,387 inch-pounds

Effect on Performance: None

TWA-Change no. 78
(Cancelled)

CONVAIR
Division of General Dynamics Corporation
San Diego, California

OPTIONAL CHANGE PROPOSAL

SPEC. NO.: 7D-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,112 PTD. - - -

CHANGE NO: 27

MODEL: (880) 22-1

ITEMS: Engine Oil Pressure Gages, Change of

ORIGIN: Customer requested, Reference: Item 6a, page 3 of FWA Comments of Mock-Up review dated 25, 27 February 1957.

REASON FOR CHANGE:

To provide four single oil pressure indicators in lieu of two dual oil pressure indicators.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Oper. Wt. Empty	Oper. Wt. Empty		
Negligible	Negligible	Negligible	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LAST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

OPTIONAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

DATE:

CONVAIR: SD

Hughes Tool Company
Change No. 77

Title: Engine Oil Pressure Gages, Change of

Origin: Customer requested, Reference: Item 6a, page 3 of TWA Comments
of Mock-Up review of 25, 27
February 1957.

Reason for Change: To provide four single oil pressure indicators in
lieu of two dual oil pressure indicators.

Description of Change:

Page 57, Paragraph 3.14.1.4 - FLIGHT ENGINEER'S INSTRUMENTS:

Change first item in instrument list as follows:

From: Four oil pressure gages (2 dual)

To: Four indicators, engine oil pressure

Page A8, APPENDIX I-C, INSTRUMENTS AND RELATED EQUIPMENT:

Change 16th item in Description List as follows:

From: "2 Dual Oil Pressure Indicator (Engine)

To: 4 Indicators, Engine Oil Pressure"

Effect on Weight Empty: Negligible

Effect on Balance: Negligible

Effect on Performance: None

The following not to appear in Specification language:

"Manufacturer's name and/or part number will be provided in APPENDIX I-C
on Customer acceptance of this Change No. 77, as soon as available."

ANALYSIS
PREPARED BY
CHECKED BY
REVISED BY

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

PAGE 74A
REPORT NO. ZD-22-002
MODEL 22
DATE 6-1-56

Rev. 12-10-57

3.16 ELECTRICAL SYSTEM (Cont)

72 3.16.8.1.7 TAXI TURN-OFF LIGHTS: Two 250-watt, white lights shall be installed in the wing leading edge, one on each side. Lights shall be directed forward at an angle of 45 degrees outboard from airplane centerline and shall share common lenses with the combination signal and auxiliary landing lights.

72 3.16.8.1.7.1 CONTROL: The taxi turn-off lights shall have individual control switches provided adjacent to each other.

3.16.8.2 INTERIOR:

3.16.8.2.1 PILOTS' COMPARTMENT LIGHTING: Overhead red and white light sources shall be installed to provide general pilots' compartment illumination. This illumination shall be controlled by switches on the overhead general lighting panel.

3.16.8.2.2 INSTRUMENT PANELS: (Lighting) Red and white instrument and cockpit lighting with separate intensity controls shall be in general conformance with Aeronautical Standard 246C, revised 12-15-54. Dimming type caps on all indicator lights shall be of all plastic construction. The intensity shall increase when the cap is rotated clockwise. Cockpit and instrument panel lighting shall be subject to cockpit mock-up approval. The white instrument panel lighting shall be connected to the emergency bus.

50 3.16.8.2.3 PEDESTAL AND OVERHEAD PANEL LIGHTING: Controlled red and white light sources shall be provided in the pilots' compartment for the pedestal. A separate rheostat for each panel shall be provided for controlling the overhead panel lights, and for controlling the pedestal panel lights. Rheostat controls shall be accessible to both pilot and copilot.

3.16.8.2.4 MAP READING LIGHTS: Individual map reading white lights, their control switches and rheostats shall be provided for the pilot and copilot.

COVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

Revised

CUSTOMER: Hughes Tool Company

MCL 10,096 Dtd 3 March 1958

CHANGE NO: 74B

MODEL: (880) 22- 1

TITLE: RMI Indicators, Change to

ORIGIN: Contractor initiated.

REASON FOR CHANGE: Present indicators are not suitable for commercial use and two Servo amplifiers, in lieu of four, are required to operate indicators; and revision to CCP No. 74A to show correction to RMI Indicator part number.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
-4.8 lb	-4.8 lb	-1,363	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 74B

Title: RMI Indicators, Change to

Origin: Contractor initiated

Reason for Change: Present indicators are not suitable for commercial use and two Servo amplifiers, in lieu of four, are required to operate indicators; and revision to CCP No. 74A to show correction to RMI Indicator part number.

Description of Change:

Page A5, APPENDIX I-C, ELECTRONIC EQUIPMENT:

Under "VHF NAVIGATION SYSTEM", change the second and fourth items as follows:

<u>From:</u>	"2 RMI Indicator	Pioneer 36115"
<u>To:</u>	"2 RMI Indicator	Bendix 36135-18-19-A1"
<u>From:</u>	"4 Servo Amplifiers"	
<u>To:</u>	"2 Servo Amplifiers	Collins 333B3"

Effect on Weight Empty: -4.8 lb
Effect on Balance: -1,363 Inch-lb
Effect on Performance: None

TWA- Change no. 74
(Rejected)

John N. Y. & T. Inc.
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPC No: SD-22-002

DATE: 19 July 1957

CUSTOMER: Hughes Tool Company

MCL 10,106 Dtd

CHANGE NO: 73

MODEL: (880) 22-1

TITLE: Exterior Lights, Changes to

ORIGIN: TWA comments on airplane mock-up inspection of 25-27 February 1957

REASON FOR CHANGE: Customer requested.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Quar. Wt. Empty	Oper. Wt. Empty	
Negligible	Negligible	Negligible Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:	AIRPLANES AFFECTED:
---------------------	---------------------

SPECIAL PROVISIONS:	EFFECT ON PRICE PER AIRPLANE:
	Recurring: _____
	Non-Recurring: _____
	Total: _____

ACCEPTED:	CONVAIR, A Div. of Gen. Dyn. Corp.
-----------	------------------------------------

BY:	Chief of Contract Administration Commercial
-----	--

CONVAL: SD

Hughes Tool Company
Change No. 73
19 July 1957
Page 1 of 2

Title: Exterior Lights, Changes to

Origin: FWA comments on airplane mock-up inspection of 25-27 February 1957

Reason for Change: Customer requested.

Description of Change:

Page 73, Paragraph 3.16.8.1.1 - FUSELAGE AND POSITION:

Change paragraph title to: "POSITION LIGHTS", and delete second and third sentences.

Paragraph 3.16.8.1.1.1 - CONTROL:

Delete paragraph and substitute following:

"Switches shall be installed in the system as required to control the forward and rearward position lights."

Page 74, Paragraph 3.16.8.1.3 - AUXILIARY LANDING LIGHT:

Delete paragraph and substitute following:

"Two 600-watt white auxiliary landing lights shall be installed; one on each side of the wing leading edge stub section. The lights shall be provided with a positioning adjustment not controllable in flight. The lights shall also be usable as taxi lights."

Paragraph 3.16.8.1.3.1 - CONTROL:

Revise paragraph to read as follows:

"A switch shall be installed on the forward center overhead switch panel to control the auxiliary landing lights."

Paragraph 3.16.8.1.6 - SIGNAL LIGHT:

Delete paragraph and substitute following:

"The two 600-watt auxiliary landing lights, described in Paragraph 3.16.8.1.3, shall be combination lights so arranged as to also serve as signal lights."

Paragraph 3.16.8.1.6.1 - CONTROL:

Delete entire paragraph.

CONVAIR: SD

Hughes Tool Company
Change No. 73
19 July 1957
Page 2 of 2

Page 85, Paragraph 3.16.17 - ESSENTIAL POWER:

Under "Lighting", delete following items:

" 9 Fuselage Lights
10 Position Light Flasher".

Page A3, APPENDIX I-C, ELECTRICAL EQUIPMENT:

Under "EXTERIOR LIGHTS", change following item:

From: 1 Signal Light

To: 2 Auxiliary Landing Lights (Signal Lights)

Delete eighth item: "1 Taxi Light".

Effect on Weight Empty: Negligible
Effect on Balance: Negligible
Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPCC NO.: SD-22-002

DATE: 18 July 1957

CURRENT MFG.: Hughes Tool Company

MCL 10,107 Ptd ---

CHANGE NO.: 72

MODEL: (80) 22-1

ITEM: Taxi Turn-Off Lights, Installation of

NOTES: TWA comments on airplane mock-up inspection of 25-27
February 1957.

REASON FOR CHANGE: Customer requested.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty +12.0 lb	Oper. Wt. Empty +12.0 lb	+5695	Inch i.b.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

No. 73

Engineering Approval

EARLIEST DATE OF ACCEPTANCE: AIRPLANES AFFECTED:

SPECIAL PROVISIONS: EFFECT ON PRICE PER AIRPLANE:
Recurring: _____
Non-Recurring: _____
Total: _____

ACCEPTED: CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____
Title: Chief of Contract Administration
Commercial

CONTRACT: 3D

Hughes Tool Company
Change No. 72
18 July 1957

Title: Taxi Turn-Off Lights, Installation of

Origin: TWA comments on airplane mock-up inspection of 25-27 February 1957

Reason for Change: Customer requested.

Description of Change:

Page 74, Paragraph 3.16.8.1 - LIGHTING EXTERIOR:

Add following new paragraphs to page:

"3.16.8.1.7 TAXI TURN-OFF LIGHTS: Two 250-watt, white lights shall be installed in the wing leading edge, one on each side. Lights shall be directed forward at an angle of 45° outboard from airplane centerline and shall share common lenses with the combination signal and auxiliary landing lights.

3.16.8.1.7.1 CONTROL: The taxi turn-off lights shall have individual control switches provided adjacent to each other."

Page 85, Paragraph 3.16.17 - ESSENTIAL POWER:

Change second item as follows: From: 2 Taxi Light

To: 2 Auxiliary Landing Lights

Add following new item under "Lighting":

15. Taxi Turn-Off Lights

Page A3, APPENDIX I-C, ELECTRICAL EQUIPMENT:

Add following new item under "EXTERIOR LIGHTS":

2 Taxi Turn-Off Lights

Effect on Weight Empty: +12.0 pounds

Effect on Balance: +5695 inch-pounds

Effect on Performance: None

Convair
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPFC NO: SD-72-002

DATE: 18 July 1957

CUSTOMER: Hughes Tool Company

MCL 10,100 Ptd ---

CHANGE NO: 71

MODEL: (880) 22-1

ITEM: Cargo Compartment Door Lights, Addition of

ORIGIN: TWA comments on airplane mock-up inspection of 25-27 February 1957

REASON FOR CHANGE: Customer request to provide additional light over each cargo door to facilitate baggage tag identity.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
<u>Oper. Wt. Empty</u> <u>+2.5 lb</u>	<u>Oper. Wt. Empty</u> <u>+2.5 lb</u>	<u>+1545</u>	<u>Inch L.B.</u>
AFFECT ON GUARANTEED PERFORMANCE: *			

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

DATED:

CONVAIR: S

Hughes Tool Company
Change No. 71
18 July 1957

Title: Cargo Compartment Door Lights, Addition of

Origin: TWA comments on airplane mock-up inspection of 25-27 February 1957.

Reason for Change: Customer request to provide additional light over each cargo door to facilitate baggage tag identity.

Description of Change:

Page 77, Paragraph 3.16.8.4.1 - CARGO COMPARTMENT LIGHTS:

Add following sentence to end of paragraph:

"A dome type light fixture shall also be provided, one each on upper door longeron over forward and aft cargo compartment doors."

Page A3, APPENDIX I-C, ELECTRICAL EQUIPMENT:

Under "INTERIOR LIGHTS" add following item:

2 Cargo Door Dome Light

Effect on Weight Empty: +2.5 pounds
Effect on Balance: +1545 inch-pounds
Effect on Performance: None

CONTRACTOR: **Convair, A Division of General Dynamics Corporation
San Diego, California**

COMMERCIAL CHANGE PROPOSAL

SPCC NO: 70-22-002

DATE: _____

CHG. NO: Hughes Tool Company

MCL 10,091 Dtd 19 June 1957

CHG. NO: 70A

MODEL: (880) 22-1

ITEM: **Selective Calling System, Relocation of**

CHG. NO: Reference: TWA Letter 880-155 dated 20 May 1957

REASON FOR CHG.: To facilitate inspection and maintenance of unit
by relocation to a more accessible area.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty +3.5 lb	Oper. Wt. Empty +3.5 lb	+1,050	Inch-lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

CHG. NO:

CONVATR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

DATE:

CONVAIR: SD

Hughes Tool Company
Change No. 70A

Title: Selective Calling System, Relocation of

Origin: Reference: TWA Letter 880-155 dated 20 May 1957

Reason for Change: To facilitate inspection and maintenance of unit by
relocation to a more accessible area.

Description of Change:

Page 101, Paragraph 3.17.2.4 - AIRBORNE SELECTIVE CALLING:

Add the following to the end of the paragraph:

"The provisions shall be made in the forward left hand passenger
coat compartment and arranged to provide accessibility to the
equipment from the flight deck."

Effect on Weight Empty: +3.5 pounds
Effect on Balance: +1050 inch-pounds
Effect on Performance: None

TWA- Change no. 70
(Rejected)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC. NO: 10-12-602

DATE: 15 July 1957

CUSTOMER: Hughes Tool Company

MCL 10,102 DTD

CHANGE NO: 69

MODEL: (880) 22-1

TITLE: Rear Lavatories, Single Service Connection; Installation of

DRIGHT: TWA Comments on airplane inspection mock-up of 25-27
February 1957

REASON FOR CHANGE: Customer requested.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty +3.1 lb	Oper. Wt. Empty +3.1 lb	+4145	Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

NOTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 69
15 July 1957

Title: Rear Lavatories, Single Service Connection, Installation of
Origin: TWA comments on airplane inspection mock-up of 25-27 February
1957

Reason for Change: Customer requested.

Description of Change:

Page 108, Paragraph 3.19.2.2 - LAVATORIES:

Add following after fourth sentence, ending on fourteenth line:

"A pressure box and access door shall be provided in the fuselage under the aft lavatories to the right of airplane centerline. Both aft lavatory drains shall be connected, through a Y-fitting, to a single connection to the pressure box for ground lavatory flushing. A flush line shall be provided to accomplish the ground flushing operation. Pressure caps shall be provided for the drain and flush lines."

Effect on Weight Empty: +3.1 pounds
Effect on Balance: +4145 inch-pounds
Effect on Performance: None

ANALYSIS
PREPARED BY
CHECKED BY
REVISED BY

CONVAIR

SAN DIEGO

PAGE 68 (Cont)
REPORT NO. ZD-22-002
MODEL 22
DATE 6-1-56

Rev. 2-28-56

3.16 ELECTRICAL SYSTEM (Cont)

3.16.5.6

125 CONDUIT: All conduit shall be installed in accordance with Convair commercial practice as defined by Convair Specification No. 0-09001. Either metallic or nonmetallic conduit may be used. Conduit size 1/2 inch (or above) in diameter shall permit later addition of wires to terminate at unused pins on connector plugs plus two spare No. 16 wires. Later addition of these wires shall not cause the conduits to fill over 75 percent. In any case the number of active wires plus the total number of spares outlined above shall not cause the total number of wires to require excessive forces for pulling in the wires. Conduit size shall be made larger if necessary to prevent excessive wire pull-in forces in any given conduit.

3.16.5.6.1

CONDUIT LOCATION: Conduit shall be provided in the nose and main landing gear wheel wells where fluid or mechanical protection and radio interference are factors. Conduit containing essential control and indicating circuit leads shall be given special consideration in fire zone areas to obtain maximum flame resistance. The ends of conduit in wheel wells shall point downward in a manner to prevent entry of liquids into the ends of the conduit. Conduit and cables shall not unduly obstruct access doors or openings.

3.16.5.7

OPEN WIRING: Open wiring subject to engine exhaust fumes, excess heat, oil or any fluids or materials experienced during normal servicing and flight operations shall be of a type not affected thereby. Open wiring shall be installed in a manner that minimizes the effects of the wire deteriorating factors outlined above.

TWA- Change No. 68

(Cancelled)

TWA - Change No. 67

(Rejected)

TWA- Change no. 66
(Cancelled)

TWA - Change No. 65
(Rejected)

CONVAIR, A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

CHGNO: AI-22-002

DATE: 12 July 1957

OUR: Hughes Tool Company

MCL 10,083 Dtd 7 June 1957

CHANGE NO: 64

MODEL: (80) 22-1

**Cabin Altimeter and Differential Pressure Gage, Individual
ITEM: Instruments; Installation of**

CHGTM: Reference: TWA Letter No. 880-106 dated 28 March 1957

REASON FOR CHANGE: Customer requested.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty +1.0 lb	Oper. Wt. Empty +1.0 lb	+297	Inch-lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

CONTRACT

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Manager of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 64
12 July 1957

Title: Cabin Altimeter and Differential Pressure Gage, Individual Instruments; Installation of

Origin: Reference: TWA Letter No. 880-106 dated 28 March 1957

Reason for Change: Customer requested.

Description of Change:

Page 57, Paragraph 3.14.1.4 - FLIGHT ENGINEER'S INSTRUMENTS:

Add following items to instrument list:

"One cabin altimeter
One cabin differential pressure gage".

Page 57, Paragraph 3.14.1.5 - MISCELLANEOUS INSTRUMENTS:

Delete fifth item "One cabin altitude indicator".

Page A8, APPENDIX I-C - INSTRUMENTS AND RELATED EQUIPMENT:

Change ninth item:

From: 1 Cabin Altitude Indicator

To: 1 Cabin Altimeter

Add: 1 Cabin Differential Pressure Gage

Effect on Weight Empty: +1.0 pound
Effect on Balance: +297 inch-pounds
Effect on Performance: None

TWA - Change No. 63-B

(Rejected)

TWA- Change No. 63
(Cancelled)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,144 Dtd _____

CHANGE NO: 62A

MODEL: (880) 22-1

TITLE: Cabin Compressor Low Oil Pressure Warning Light, Deletion of

ORIGIN: Contractor initiated.

REASON FOR CHANGE: Compressor was redesigned to delete oil pump, therefore a low oil pressure warning light is not required.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty -1.0 lb	Oper. Wt. Empty -1.0 lb	-400 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

CCP No. 62

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 62A

Title: Cabin Compressor Low Oil Pressure Warning Light, Deletion of
Origin: Contractor initiated.

Reason for Change: Compressor was redesigned to delete oil pump,
therefore a low oil pressure warning light is not
required.

Description of Change:

Page 57, Paragraph 3.14.1.4 FLIGHT ENGINEER'S INSTRUMENTS:

Delete the following item from the instrument list:

"2 Warning light, cabin compressor low oil pressure."

Page A8, APPENDIX I-C, INSTRUMENTS AND RELATED EQUIPMENT:

Delete the following item from the Description list:

"2 Warning light, cabin compressor low oil pressure."

Effect on Weight Empty: -1.0 pound
Effect on Balance: -400 inch-pound
Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPRC NO: CD-22-002

DATE: 24 September 1957

CUSTOMER: Hughes Tool Company

MCL 10.081 Dtd 7 June 1957

CHANGE NO: 62

MODEL: (880) 22-1

TITLE: Warning Lights and Turbine Tachometer, Air Conditioning and
Pressurization Control; Installation of

ORIGIN: Reference: TWA Letter No. 880-106 dated 28 March 1957

REASON FOR CHANGE: Customer requested

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty	Inch L.b.	
+1.0	+1.0	+400	

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 62
12 July 1957
Page 1 of 2

Title: Warning Lights and Turbine Tachometer, Air-Conditioning and Pressurization Control, Installation of

Origin: Reference: TWA Letter No. 880-106 dated 28 March 1957

Reason for Change: Customer requested.

Description of Change:

Page 57, Paragraph 3.14.1.4 - FLIGHT ENGINEER'S INSTRUMENTS:

Add following items to instrument list:

"2 Indicator, cabin compressor bearing temperature
2 Indicator, turbine tachometer, cabin compressor
2 Warning light, cabin compressor low oil pressure
2 Warning light, cabin compressor overspeed trip"

Page 58, Paragraph 3.14.1.5 - MISCELLANEOUS INSTRUMENTS:

Delete following items from instrument list:

"Required cabin compressor pressure indicators
Required cabin compressor pressure warning lights".

Page A8, APPENDIX I-C - INSTRUMENTS AND RELATED EQUIPMENT:

Delete sixth item from Description List:

"2 Cabin Supercharger Oil Temperature Indicator".

Add following items to Description List:

"2 Indicator, cabin compressor bearing temperature
2 Indicator, turbine tachometer, cabin compressor
2 Warning light, cabin compressor low oil pressure
2 Warning light, cabin compressor overspeed trip"

Page A17, APPENDIX I-C - PRESSURIZATION, ANTI-ICING AND AIR COND. SYS.

Add following item to Description List:

"2 Turbine tachometer (with amplifier), cabin compressor"

CONVAIR: SD

Hughes Tool Company
Change No. 62
12 July 1957
Page 2 of 2

Effect on Weight Empty: +1.0 pound
Effect on Balance: +400 inch-pound
Effect on Performance: None

Following not to appear in specification language:

"Manufacturers names and/or part numbers for new items to be furnished under this Change No. 62 will be provided when available, for inclusion in APPENDIX I-C."

C C M V A I
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,153 M&D 4 November 1957

CHANGE NO: 61A

MODEL: (880) 22-1

TITLE: Pilot and Copilot Chart Lights, Control of

ORIGIN: Reference: CCP Conference, between TWA and Convair Representatives, of 8 and 9 August 1957.

REASON FOR CHANGE: Customer request for revision of CCP No. 61.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	
+ 2 lbs	+ 2 lbs	+ 450 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

BY:

Chief of Contract Administration
Commercial

DATE:

CONVAIR: 30

Hughes Tool Company
Change No. 61A

Title: Pilot and Copilot Chart Lights, Control of

Origin: Reference: CCP Conference, between TWA and Convair Representatives, of 8 and 9 August 1957.

Reason for Change: Customer request for revision of CCP No. 61.

Description of Change:

Page 75, Paragraph 3.16.8.2.4 MAP READING LIGHTS

Revise paragraph and title as follows:

"PILOTS' AND COPILOTS' CHART LIGHTS: Individual chart-reading lights, with separate control rheostats mounted on the overhead panel support, shall be provided for the pilot and copilot. Each light assembly shall be equipped with a selector feature designed to emit either a red or a white light beam. The light beam shall be adjustable by an universal provision to cover the general area of the pilot and copilot seats. Each light beam shall be capable of being focused to approximately a 2-inch diameter spot when directed on a chart in either the pilot's or copilot's lap."

Enclosure: (A) Four (4) copies of Convair Drawing No. 22-09476, Light Assembly, Map Reading, Cockpit (for information only).

Effect on Weight Empty: +2.0 pounds

Effect on Balance: +450 inch-pounds

Effect on Performance: None

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC. NO.: 880-2-002

DATE: 12 July 1957

CUSTOMER: Hughes Tool Company

MCL 10,079 Dtd 7 June 1957

CHANGE NO.: 60

MODEL: (880) 22-1

ITEM: Overhead Switch Panel Light Control, Installation of

ORIGIN: Reference: TWA Letter No. 880-106 dated 28 March 1957

REASON FOR CHANGE: Customer requested.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty +0.7 lb	Oper. Wt. Empty +0.7 lb	+157	Inch I.b.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 60
12 July 1957

Title: Overhead Switch Panel Light Control, Installation of
Origin: Reference: TWA Letter No. 880-106 dated 28 March 1957
Reason for Change: Customer requested.

Description of Change:

Page 75, Paragraph 3.16.8.2.3 - PEDESTAL AND OVERHEAD LIGHTING PANEL:

Add following after first sentence:

"A separate rheostat for each panel shall be provided for controlling the overhead panel lights, and for controlling the pedestal panel lights."

Effect on Weight Empty: +0.7 pounds
Effect on Balance: +157 inch-pounds
Effect on Performance: None

ANALYSIS
PREPARED BY
CHECKED BY
REVISED BY

CONVAIR

SAN DIEGO

PAGE 59 Cont.
REPORT NO 2D-22-002
MODEL 22
DATE 6-1-56

Rev. 1-26-59

3.14

INSTRUMENTS AND NAVIGATIONAL EQUIPMENT (Cont)

3.14.3.4.1
(Cont)

preclude deviation errors resulting from improper positioning of the flux gate unit. A centered arrow pointer (lubber line), inscribed on a small metal plate, shall be provided to indicate the relationship of the flux gate to the longitudinal axis of the airplane. Flux gate mounting and environment shall be such that the units will not be subjected to vibration or shock loads to a degree which would permit deterioration under all normal operating conditions. The installation shall be designed to preclude undue deterioration of the flux gate units as a result of vibration levels to be encountered in this area under normal operating conditions.

TWA - Change no. 59

(Rejected)

TWA - Change No. 58

(Rejected)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPNC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,055 Dtd 16 May 1957

CHANGE NO: 57B

MODEL: (880) 22-1

TITLE: Increase of Landing Weight to 130,000 pounds.

ORIGIN: Meeting of 24 April 1957 between Convair and Delta Representatives and Contractor Proposed for Hughes Tool Company.

REASON FOR CHANGE: To permit an increase in landing weight by replacing stators, rotors and linings of existing brakes with larger stators, rotors and linings; and revision to CCP No. 57A.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty +75.0 lbs	Oper. Wt. Empty +75.0 lbs	+59,490 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *	None
-------------------------------------	------

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:	AIRPLANES AFFECTED:
----------------------------	---------------------

SPECIAL PROVISIONS:	EFFECT ON PRICE PER AIRPLANE:
	Recurring:
	Non-Recurring
	Total:

ACCEPTED:	CONVAIR, A Div. of Gen. Dyn. Corp.
-----------	------------------------------------

BY:	Chief of Contract Administration
	Commercial

CONVAIR: SJ

Hughes Tool Company
Change No. 57B

Title: Increase of Landing Weight to 130,000 pounds

Origin: Meeting of 24 April 1957 between Convair and Delta Representatives, and Contractor Proposed for Hughes Tool Company.

Reason for Change: To permit an increase in landing weight by replacing stators, rotors and linings of existing brakes with larger stators, rotors and linings; and revision to CCP No. 57A.

Description of Change:

Page 12, Paragraph 3.1.1.1 - GUARANTEED PERFORMANCE:

Change fourth item on page as follows:

From: 123,500

To: 130,000 for maximum allowable landing weight.

Page 19, Paragraph 3.4.1 - STRENGTH:

Change "maximum landing weight":

From: 123,500**

To: 130,000 lbs.

Delete last three lines on page "(Maximum structural landing weight may be)"

Page A13, APPENDIX I-C, LANDING GEAR EQUIPMENT:

Under "Main Gear" and "Nose Gear" items, add the following:

"Weight of landing gear wheel and brakes increased 75 lbs. based on Goodyear equipment, over above weights for maximum landing weight of 130,000 lbs."

Effect on Weight Empty: +75.0 pounds

Effect on Balance: +59,490 inch-pounds

Effect on Performance: None

TWA - Change No.
(Cancelled)

CONVAIR
Division of General Dynamics Corporation
San Diego, California

CONVAIR CHARGE CHANGE PROPOSAL

SPEC. NO.: DR-22-002

DATE: 4 June 1957

CUSTOMER: Hughes Tool Company

MCN 10.077 11d

CHANGE NO.: 56A

MODEL: (P80) 22-1

TITLE: Performance Data; Revisions to

INITIATOR: Contractor Initiated

REASON FOR CHANGE: To furnish Customer with latest available performance data.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty	Inch-lbs.	
None	None	None	

EFFECT ON GUARANTEED PERFORMANCE: *

Noted

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

C.C.P. No. 50 - CJ-805-3 Engines,
Change to

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

APPROVED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____
Title: _____

BY: Chief of Contract Administration
Title: Commercial

CONTRACT: SD

Hughes Tool Company
Change No. 56A
4 June 1957

Title: Performance Data, Revisions to

Origin: Contractor Initiated

Reason for Change: To furnish Customer with latest available performance data.

Description of Change:

Page 11, Paragraph 3.1.1.1 - GUARANTEED PERFORMANCE:

Under "Take-off distance", last two numbers on page, change:

"4,630 to 4,400
7,610 to 7,230". (See note below)

Page 12, Paragraph 3.1.1.1 -

First item on page, change: "6,820" to "6,480".

Second item, change: "5,650" to "5,930".

Third item, "Maximum allowable take-off weight", change:

"..... shall not preclude operation at 174,025 lb.
at 173,500"

to

"..... shall not preclude operation at 179,025 lb.
at 178,500".

Effect on Weight Empty: None

Effect on Balance: None

Effect on Performance: Noted

Note: Additional change made 10-24-57, requested by Contract
and approved by P.O.: tolerance for this item changed
from ± 800 feet to ± 675 feet.

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL _____ Dtd _____

CHANGE NO: 54

MODEL: (880) 22-1

TITLE: **Specification Administrative Change**

ORIGIN: **Convair initiated.**

REASON FOR CHANGE: **To delete exciter ceiling protection, which is not required in the installation.**

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty	
0	0	0 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

DATE:

CONVAL: SD

Hughes Tool Company
Change No. 54

Title: Specification Administrative Change

Origin: Convair initiated.

Reason for Change: To delete exciter ceiling protection, which is not required in the installation.

Description of Change:

Page 65, Paragraph 3.16.2.1.1 CONTROL SYSTEM:

Delete the 12th item "(Exciter ceiling protection.)"

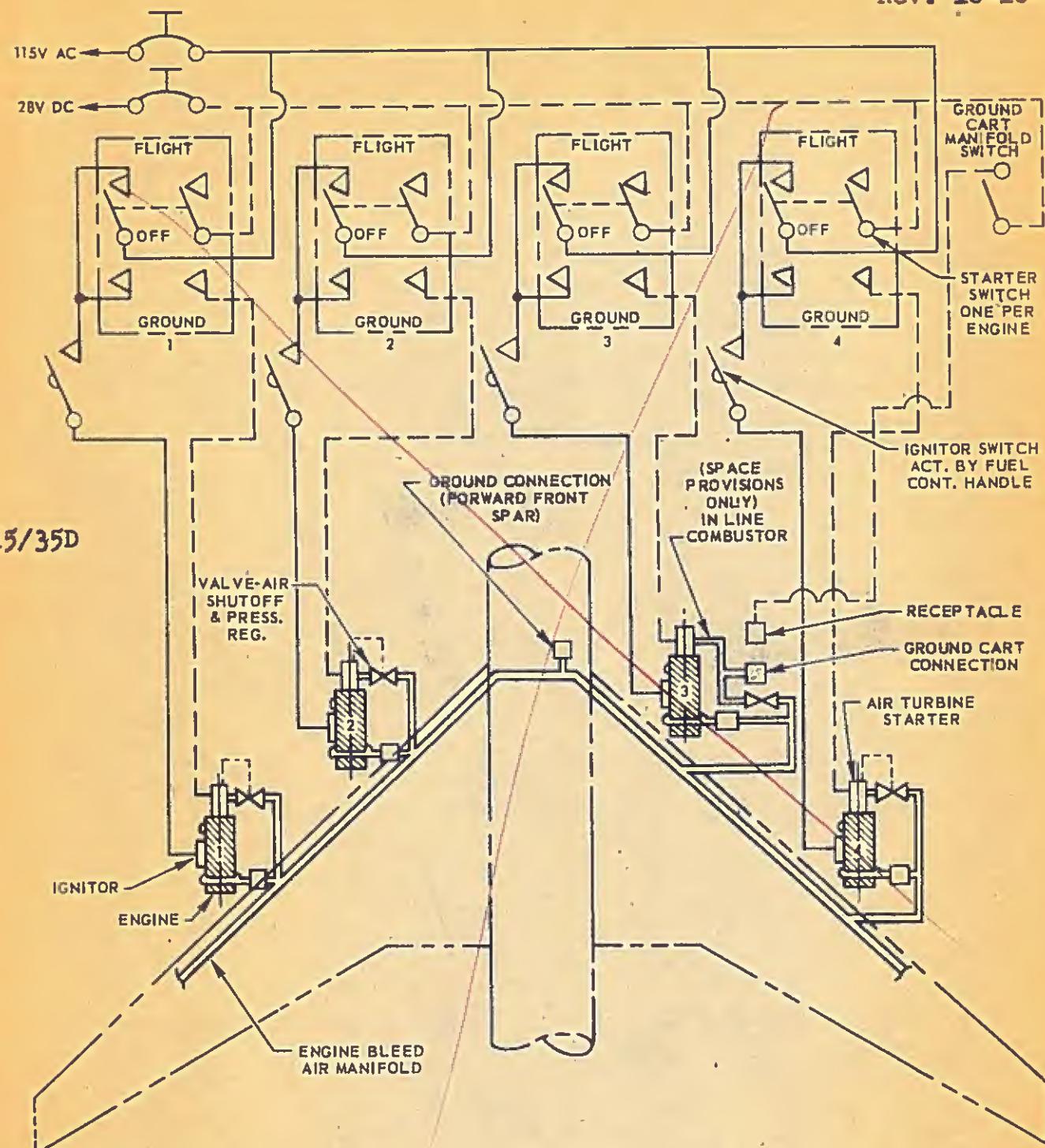
Effect on Weight Empty: 0

Effect on Balance: 0

Effect on Performance: None

CONVAIR, SD

Page 54A
Report No. ZD-22-002
Model 22
Date 6-1-56
Rev. 10-10-58



ENGINE STARTING SYSTEM

TWA

Figure 3.12-1

TWA. Change No. 53

(Cancelled)

1. A. V. A. T.
2. General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPC# No.: 20-42-002

DATE: 30 April 1957

CHANGEMAKER: Hughes Tool Company

NCI 10040 Rtd 19 April 1957

CHANGE NO.: 52

MODEL: (880) 22-1

1. TITLE: Deletion of Access Door in Aft Pressure Bulkhead

2. REASON: Customer requested, Ref.: TWA Letter 880-98 of 11 March 1957

3. REASON FOR CHANGE: Deletion of this door will eliminate a possible source of cabin pressure leakage, and provide a bulkhead area which can have uninterrupted trim covering for a more pleasing appearance.

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty		
- 3.2	- 3.2	- 4400	Inch-lb.

4. EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

5. LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

6. SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

7. APPROV:

CONVAIR, A Div. of Gen. Dyn. Corp.

8. APPROV:

BY:

Chief of Contract Administration
Commercial

CONVAIR: SD

30 April 1957
Change No. 52

Title: Deletion of Access Door in Aft Pressure Bulkhead

Origin: Customer requested, Ref.: TWA Letter 880-98 of 11 March 1957

Reason for Change: Deletion of this door will eliminate a possible source of cabin pressure leakage, and provide a bulkhead area which can have uninterrupted trim covering for a more pleasing appearance.

Description of Change:

Present Specification language does not cover minor access doors.

Effect on Weight Empty: -3.2 pounds
Effect on Balance: -4400 inch-pounds
Effect on Performance: None

GENERAL DYNAMICS
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPSC No: 0-22-002

DATE: 30 April 1957

CUSTOMER: Hughes Tool Company

MCL 10040 Dtd 19 April 1957

CHANGE NO: 51

MODEL: (880) 22-1

ITEM: Installation of External Access Door in Tail Cone

REASON: Customer requested, Ref.: TWA Letter 880-98 of 11 March 1957

REASON FOR CHANGE: To improve access to the tail cone area.

Not applicable, covered by PSA 1446A

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
+19.7 lb	+19.7 lb	27,601	Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

NOTE: TPD:

GD-NAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

ONVAIR: SD

30 April 1957
Change No. 51

Title: Installation of External Access Door in Tail Cone

Origin: Customer requested, Ref.: TWA Letter 880-98 of 11 March 1957

Reason for Change: To improve access to the tail cone area.

Description of Change:

Page 30 - Add new paragraph as follows:

3.7.1.5.5 TAIL CONE ACCESS DOOR: An access door, approximately 17.0" wide by 19.0", shall be installed on the bottom fuselage centerline aft of the rear pressure bulkhead for access into the unpressurized tail cone area for ground maintenance and inspection.

Effect on Weight Empty: +19.7 pounds
Effect on Balance: +27,601 inch-pounds
Effect on Performance: None

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPNC ID: 70-22-602

DATE: 13 May 1957

CHUMMER: Hughes Tool Company

MCL 10,033 Dtd 3 April 1957

CHANGE NO: 50

MODEL: (P80) 22-1

ITEM: CJ-805-3 Engine Installation

ARTGTM: General Electric Proposed

REASON FOR CHANGE: To improve take-off performance.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty	None	Inch Lb.
None	None	None	

EFFECT ON GUARANTEED PERFORMANCE: *

See attached sheet.

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

DATE ISSUED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

CONVAIR: SD

13 May 1957
Change No. 50
Page 1 of 2

Title: CJ-805-3 Engine Installation

Origin: General Electric Proposed

Reason for Change: To improve take-off performance.

Description of Change:

Page 10, Paragraph 3.1.1 - PERFORMANCE:

Revise paragraph to read as follows:

"The performance computations for the airplane are based on the Standard Configuration described herein, with doors and windows closed, with the General Electric CJ-805-3 engine, and in addition are based on the following:

- A. An NACA standard atmosphere except as noted.
- B. Except for take-off data, the engine data shown in General Electric curves A-4012162-502B (4-9-56), -503B (4-9-56), -504B (undated), -505B (3-3-56), -506B (3-3-56), -507B (3-3-56), -508B (3-3-56) and -510B (3-16-56) with the cruise specific-fuel-consumptions reduced by 4-1/2 percent as guaranteed by General Electric.
- C. The take-off data as shown in General Electric Engine Specification No. E-723, dated 15 March 1957.
- D. A JP-4 fuel (MIL-F-5624C) having an average net heating value of 18,650 Btu/lb.
- E. With engine data corrected for operation of cabin pressurization and air conditioning units and for installation losses excluding the effects of engine sound suppressors."

Page 10, Paragraph 3.1.1.1 - THE FOLLOWING PERFORMANCE OF THE AIRPLANE IS GUARANTEED:

Revise paragraph to read as follows:

"It shall not be acceptable to demonstrate guaranteed performance with thrust, other than take-off, in excess of engine specification values existing at the date of revision one (1) of this specification or take-off thrust in excess of those shown in General Electric Engine Specification No. E-723 dated 15 March 1957, with all thrusts reduced for installation losses excluding the effects of engine sound suppressors. Demonstrations for all guaranteed performance shall be made under existing atmospheric conditions using NACA atmospheric tables plus humidity corrections

established by CAA. All field lengths given are for level, dry, hard surface runways and zero wind conditions. Convair need not demonstrate to Buyer those performance guarantees which are included in the CAA certified data, but copies of the CAA report showing attainment of such performances shall be furnished to the Buyer."

Revise last two items on Page 11, and first item on Page 12 to read as follows:

"Take-off distance at sea level over 50-ft obstacle in accordance with CAR 4b (1.2 V_{S_1} used for take-off speed) with a weight of 140,000 lb ft. $\pm 5\%$ 4,630

Take-off distance at sea level over 50-ft obstacle in accordance with CAR 4b (1.2 V_{S_1} used for take-off speed) with a weight of 173,500 lb at lift off ft. ± 800 7,610

Take-off distance at sea level over 31-ft obstacle in accordance with CAR 4b (1.2 V_{S_1} used for take-off speed) on a 90 degree F. day with weight of 160,000 lb ft. $\pm 5\%$ 6,820 "

Page 8, Paragraph 2.1 - APPLICABLE SPECIFICATIONS:

Last line of page, replace "General Electric Engine Specification No. E-709" with "General Electric Engine Specification No. E-723 dated 15 March 1957".

Effect on Weight Empty: None
Effect on Balance: None
Effect on Performance: As noted

CONTRACT
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPCC NO: RD-P2-002

DATE: 17 April 1957

CUSTOMER: Hughes Tool Company

MCL 10,031 and 26 March 1957

CHANGE NO: 49

MODEL: (880) 22-1

TITLE: Passenger Oxygen Outlets - Change to Six Abreast:

ORIGIN: Customer requested - Ref.: TWA Ltr. 880-102, dated 20 March, 1957

REASON FOR CHANGE: To provide oxygen outlet facilities for children in arms (tourist and mixed version seating).

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty + 7.0	Oper. Wt. Empty +7.0	+5838	Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

OFFICIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

RECEIVED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____
Title: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

17 April 1957
Change No. 49

Title: Passenger Oxygen Outlets - Change to Six Abreast

Origin: Customer requested - Ref.: TWA Letter 880-102, dated 20
March 1957

Reason for Change: To provide oxygen outlet facilities for children in
arms. (Tourist and mixed version seating.)

Description of Change:

Page 118, Paragraph 3.19.5.4 - INDIVIDUAL OUTLETS

Add after first sentence:

Provisions for one additional mask shall be made for each seat row
(3 masks for each seat row on both sides of the airplane) to provide
for emergency oxygen for children in arms.

Figure 3.19-14 - Revise to show additional oxygen outlets.

Effect on Weight: +7.0
Effect on Balance: +5838 inch-lb
Effect on Performance: None

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPRC NO: 7D-22-002

DATE: 15 April 1957

CUSTOMER: HUGHES TOOL COMPANY

MCL 10034 Dtd

CHANGE NO: 48

MODEL: (880) 22-1

ITEM: Main Landing Gear; Heat Treat - Revision of

ORIGIN: Contractor Initiated

REASON FOR CHANGE: For purpose of weight control.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty	Inch Lb.	
0	0	0	

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

Supt. of Contract Administration
Commercial

CONVAIR: SD

15 April 1957
Change No. 48

Title: Main Landing Gear, Heat Treat; Revision of

Origin: Contractor Initiated

Reason for Change: For purpose of weight control.

Description of Change:

Page 36, Paragraph 3.8.4.8 - MATERIAL PROPERTIES

Delete paragraph and substitute following:

The main landing gear shock strut outer cylinder and piston, and the wheel truck beam may be made from SAE 4340 steel, heat treated to 260,000 - 280,000 psi. The tensile properties of the steels used in all other gear components shall not exceed 240,000 psi (max) unless approved by Buyer.

Effect on Weight Empty: None

Effect on Balance: None

Effect on Performance: None

COIVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: CD-22-002

DATE: 16 April 1957

CUSTOMER: Hughes Tool Company

MCL 10037 Dtd

CHANGE NO: 47

MODEL: (880) 22-1

TITLE: Cargo Doors: Increase in Size of

ORIGIN: Requested by Customers in their Mock-up Comments.

REASON FOR CHANGE: To provide access for entry of larter articles.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty +16.0	Oper. Wt. Empty +16.0	+12,848 Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

NOTE/PWD:

COIVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

16 April 1957
Change No. 47

Title: Cargo Doors; Increase in Size of

Origin: Customer requested in their Mock-up comments.

Reason for Change: To provide access for entry of larger articles.

Description of Change:

Page 30, Paragraph 3.7.1.5.4 - Cargo Doors

Change, in third sentence: 30 inches by 3 $\frac{1}{4}$ inches, to 39 inches
3 $\frac{1}{4}$ inches.

Enclosure (A) Five (5) copies Contractor Proposal 1 - Increase
Opening to Receive 27 x 32 x 89 Container.

Figure 1-2 - Inboard Profile and Plan View:
Revise to show correct cargo area.

Effect on Weight Empty: +16.0
Effect on Balance: +12,848
Effect on Performance: None

HUGHES
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC. NO.: SD-22-002

DATE: 15 April 1957

CUSTOMER: HUGHES TOOL COMPANY

MCL 10,029 Dtd 28 Mar. 1957

CHANGE NO.: 46

MODEL: (880) 22-1

ITEM: ANTI-COLLISION LIGHT - UPPER FUSELAGE INSTALLATION

BRIGTN: Customer requested - Ref. TWA Ltr. 880-79, dated 12 Feb. 1957

REASON FOR CHANGE: To relocate the upper anti-collision light to a position on the fuselage that will permit access for maintenance. Ref. R.F.C. 3.16.D4

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty	Inch Lb.	
+4.0	+4.0	+3103	

EFFECT ON GUARANTEED PERFORMANCE: *

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

CONTRACT:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

15 April 1957
Change No. 46

Title: Anti-Collision Light - Upper Fuselage Installation

Origin: Customer Requested - Reference: TWA Ltr. 880-79 dated
2 February 1957

Reason for Change: To relocate the upper anti-collision light to a position on the fuselage that will permit access for maintenance. Ref. 3 R.F.C. 3.16.D4.

Description of Change:

Page 74, Paragraph 3.16.8.1.4 - ANTI-COLLISION LIGHTS

Change paragraph to read as follows:

The airplane shall be equipped with two anti-collision lights; one providing light for the upper hemisphere and the other for the lower hemisphere. The upper light shall be accessible from within the passenger compartment. Drainage provisions shall be made to assure fluid drainage as a result of accumulation of condensed moisture or other fluids which may become trapped. The lower light shall not be adjacent to any fuel or hydraulic fuel vent or drain line.

Exhibit to Change: (Not to appear in specification language.)

The upper light shall be removed from the fin tip and installed at the ^cL of the fuselage at a point approximately opposite the lower light. The light shall be accessible from within the passenger cabin area through a door in a pressure tight housing. A removable panel in the interior trim will be provided. Wiring shall be changed as required.

Effect on Weight:	Weight Empty: +4.0
Effect on Balance:	+3103 inch lb.
Effect on Performance:	None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL _____ Dtd _____

CHANGE NO: 44B

MODEL: (880) 22-1

TITLE: High Pressure Oxygen Gas System, Change to

ORIGIN: Reference: TWA TWX date 16 September 1957 and TWA Letter No. 880-352, dated 16 October 1957

REASON FOR CHANGE: Customer request for revision to CCP No. 44A, dated 22 March 1957

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty - 73.0 lbs	Oper. Wt. Empty + 104.0 lbs	- 8,880' Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 44B

Page 1 of 2

Title: High Pressure Oxygen Gas System, Change to

Origin: Reference: TWA TWX dated 16 September 1957 and TWA Letter No. 880-352, dated 16 October 1957

Reason for Change: Customer request for revision to CCP 44A, dated 22 March 1957

Description of Change:

Page 117, Paragraph 3.19.5.1 GENERAL:

Revise first sentence to read as follows:

"A high pressure gas type oxygen system shall be installed for use of the operating crew (pilot, copilot and flight engineer) passengers, non-operating crew (observer and cabin attendants) and in each lavatory

Paragraph 3.19.5.2 COMPONENTS:

Revise first sentence to read as follows:

"System components shall be comprised of regulators, valves, metering orifice valve, tubing, mask assemblies and three oxygen cylinder assemblies including pressure gages. Complete provisions for a fourth cylinder assembly shall be made".

Page A18, APPENDIX I-C, OXYGEN EQUIPMENT:

Delete the following items from the description list:

"1 Build-up & Vent Valve
1 Oxygen Converter
1 Quantity Gage
1 Filler Valve"

Add the following items to the description list:

* "3 High Pressure Oxygen Cylinder Assemblies (107 cu. ft.) 177 lbs
2 Pressure Reducers
AR Check Valve
AR Check Valve Tee
1 Line Valve"

* Useful Load item

CONVAIR: SD

Hughes Tool Company
Change No. 44B

Page 2 of 2

Figure 3.19-4 HIGH PRESSURE OXYGEN GAS SYSTEM SCHEMATIC

Delete present figure from the Specification and substitute
Enclosure: (A)

Enclosure: (A) Figure 3.19-4 HIGH PRESSURE OXYGEN GAS SYSTEM (Revised)

	<u>Weight</u>	<u>Effect on Balance</u>
Effect on Weight Empty:	- 73.0 lbs	- 56,670 inch-lbs
Effect on Useful Load:	+177.0 lbs	+47,790 inch-lbs
Effect on Operating Weight Empty:	+104.0 lbs	- 8,880 inch-lbs
Effect on Performance:	none	

ANALYSIS
PREPARED BY
CHECKED BY
REVISED BY

CONVAIR
A DIVISION OF GENERAL AVIATION CORPORATION
SAN DIEGO

PAGE
REPORT NO ZD-22-002
MODEL 22-1
DATE

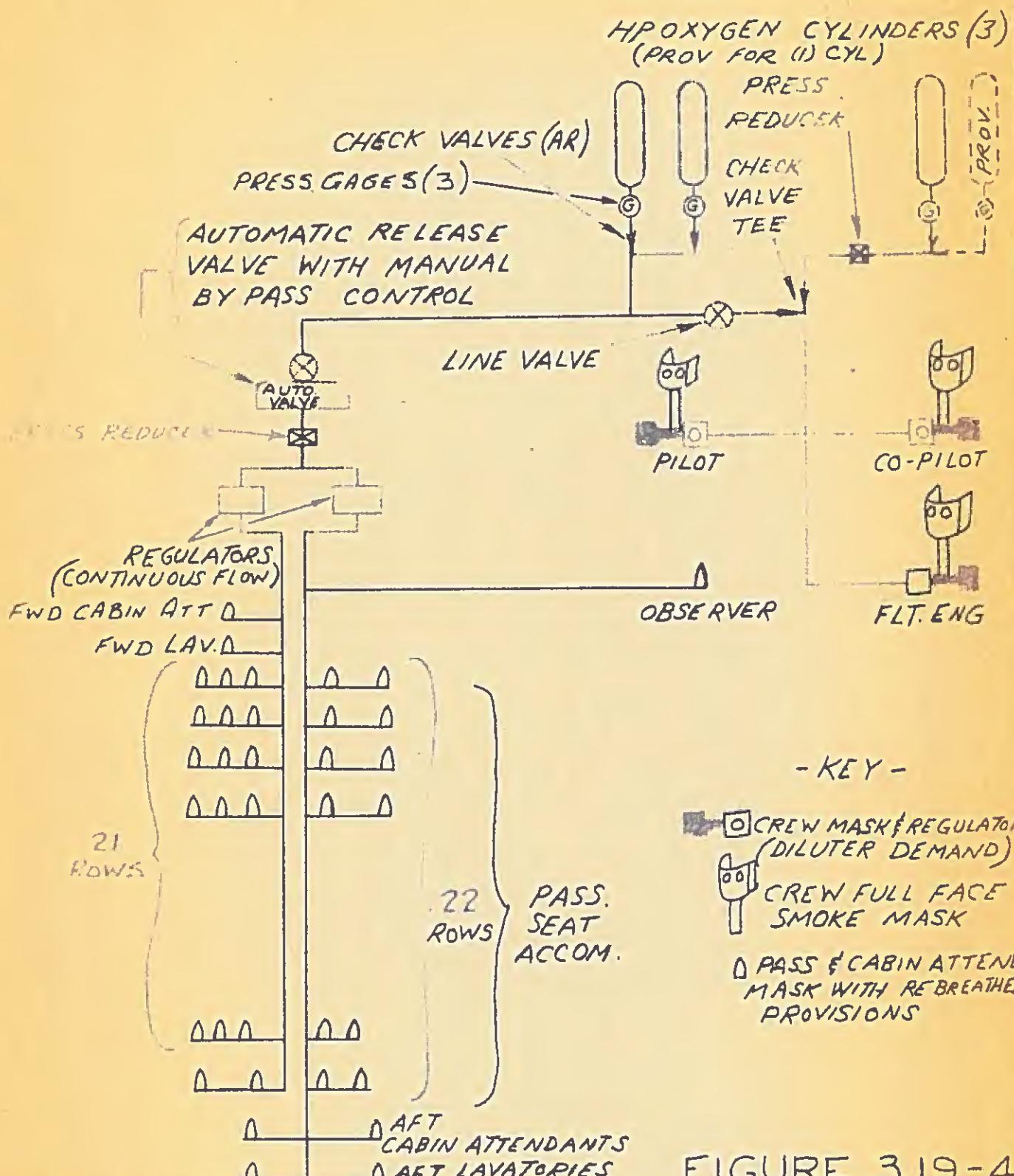


FIGURE 3.19-4

HIGH PRESS. OXYGEN GAS SYSTEM SCHEMATIC

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPCC NO: 880-22-002

DATE: 9 May 1957

CUSTOMER: Hughes Tool Company

MCL Ptd

CHANGE NO: 43

MODEL: (880) 22-1

TITLE: Flux Valve, Wing Inspection Plate - Relocation of

ORIGIN: Contractor Initiated

REASON FOR CHANGE: Inspection and adjustment after installation is not practical from underside of wing, thus requiring access from upper wing surface.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	None Inch Lb.
None	None	

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administrator
Commercial

INITIALS:

CONVAIR
Division of General Dynamics Corporation
San Diego, California

ADDITIONAL CHANGE PROPOSAL

SPN: No.: 40-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL _____ Std. _____

CHANGE NO.: 42

MODEL: (880) 22-1

TITLE: Warning System, Changes to

ORIGIN: Contractor Initiated

REASON FOR CHANGE: To clarify the intent of the specification.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty	0	Inch L.b.
0	0	0	

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

Title: Warning System, Changes to

Origin: Contractor Initiated

Reason for Change: To clarify the intent of the specification.

Description of Change:

Page 40, Paragraph 3.10.2.1 - LIFT AND DRAG INCREASING DEVICE SYSTEMS:

Add the following to the end of the paragraph:

"An electrical interconnect between flaps, landing gear scissors switch and throttles shall be provided. This interconnect will sound the warning horn when any two throttles are advanced to take-off position and the flaps and elevator trim are not in the take-off regime."

Page 80, Paragraph 3.16.11.1 - LANDING GEAR WARNING HORN:

Revise third sentence to read as follows:

"When both the main and nose landing gears are down and locked the horn will operate if the landing gear override lever is moved."

Delete the fourth sentence "(When the scissors switches are closed)"

Effect on Weight Empty: 0

Effect on Balance: 0

Effect on Performance: None

13750 North General Kearny Street
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPFC NO: 11-22-002

DATE: 12 April 1957

CUSTOMER: Hughes Tool Company

FCI 10,036 ptd

CHANGE NO: 41

MODEL: (780) 22-1

TITLE: Delete One Aft Baggage Compartment Door, Relocate Remaining Door

ORIGIN: Contractor Initiated.

REASON FOR CHANGE: To increase usable cargo volume and decrease weight.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
-59.6	-59.6	-64,400	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LAST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ATTACHED:

COVIAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

CONVAIR:SD

12 April 1957
Change No. 41

Title: Delete one aft baggage compartment door, and relocate remaining door.

Origin: Contractor Initiated.

Reason for Change: To increase usable cargo volume and decrease weight.

Description of Change:

Page 30, paragraph 3.7.1.5.4 - CARGO DOORS.

Revise first two sentences to read as follows:

"Two inward opening doors shall be provided for access to the cargo areas below the floor. One door shall be provided for each cargo area. The doors shall be approximately centrally located, fore and aft with respect to the end bulkheads."

Figure 1-1 - General Arrangement Drawing:

Revise to show one centrally located aft compartment cargo door.

Figure 1-2 - Inboard Profile and Plan View Drawing:

Revise to show correct cargo storage area.

Effect Weight Empty:

-59.6 lb

Effect on Balance:

-64,400 inch-lb

Effect on Performance:

None

ANALYSIS
PREPARED BY R. MOLLOY
CHECKED BY
REVISED BY

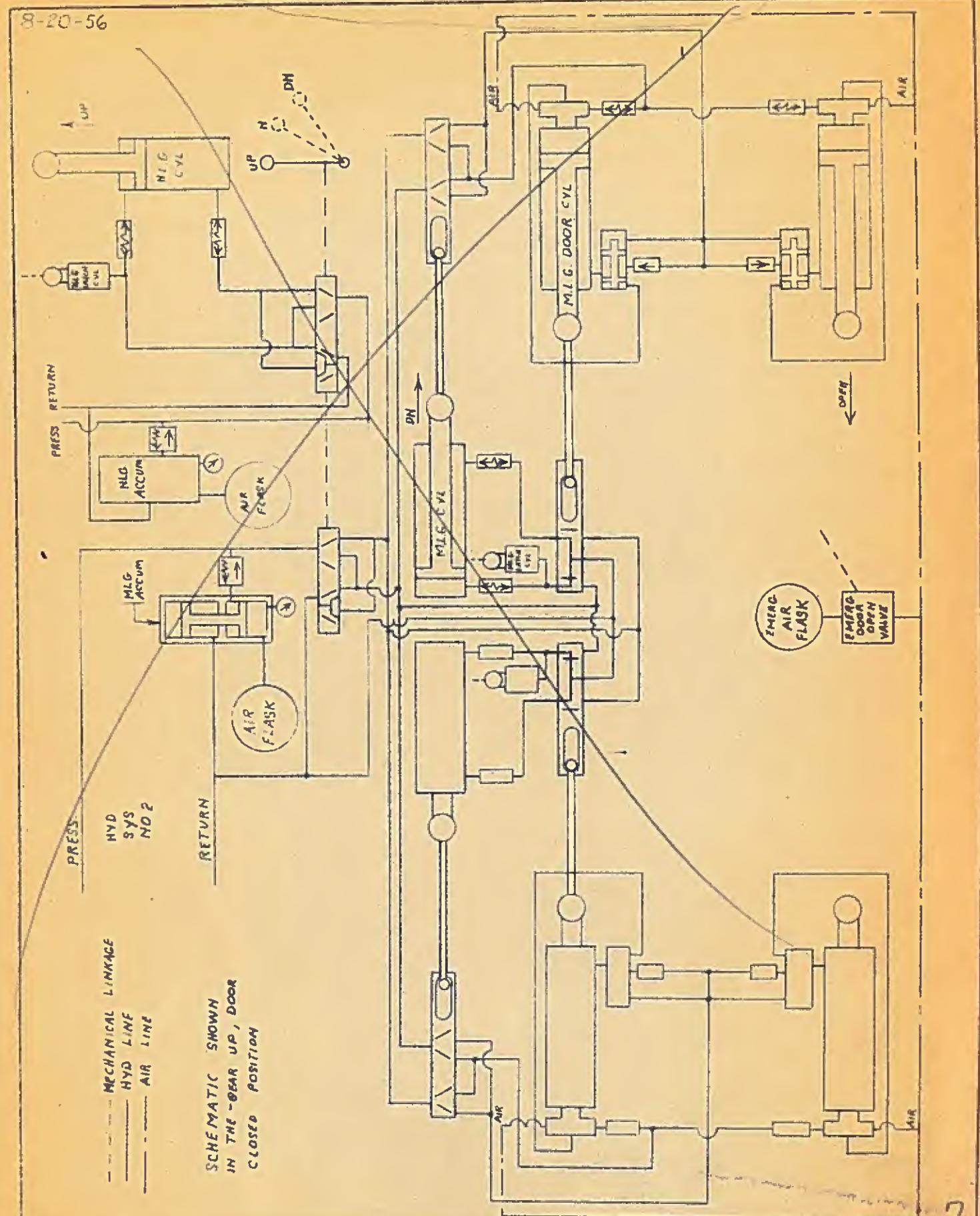
CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO

PAGE 38A
REPORT NO. 20-22-00
MODEL
DATE

HYD. LANDING GEAR WITH ACCUMULATORS

(A)

8-20-56



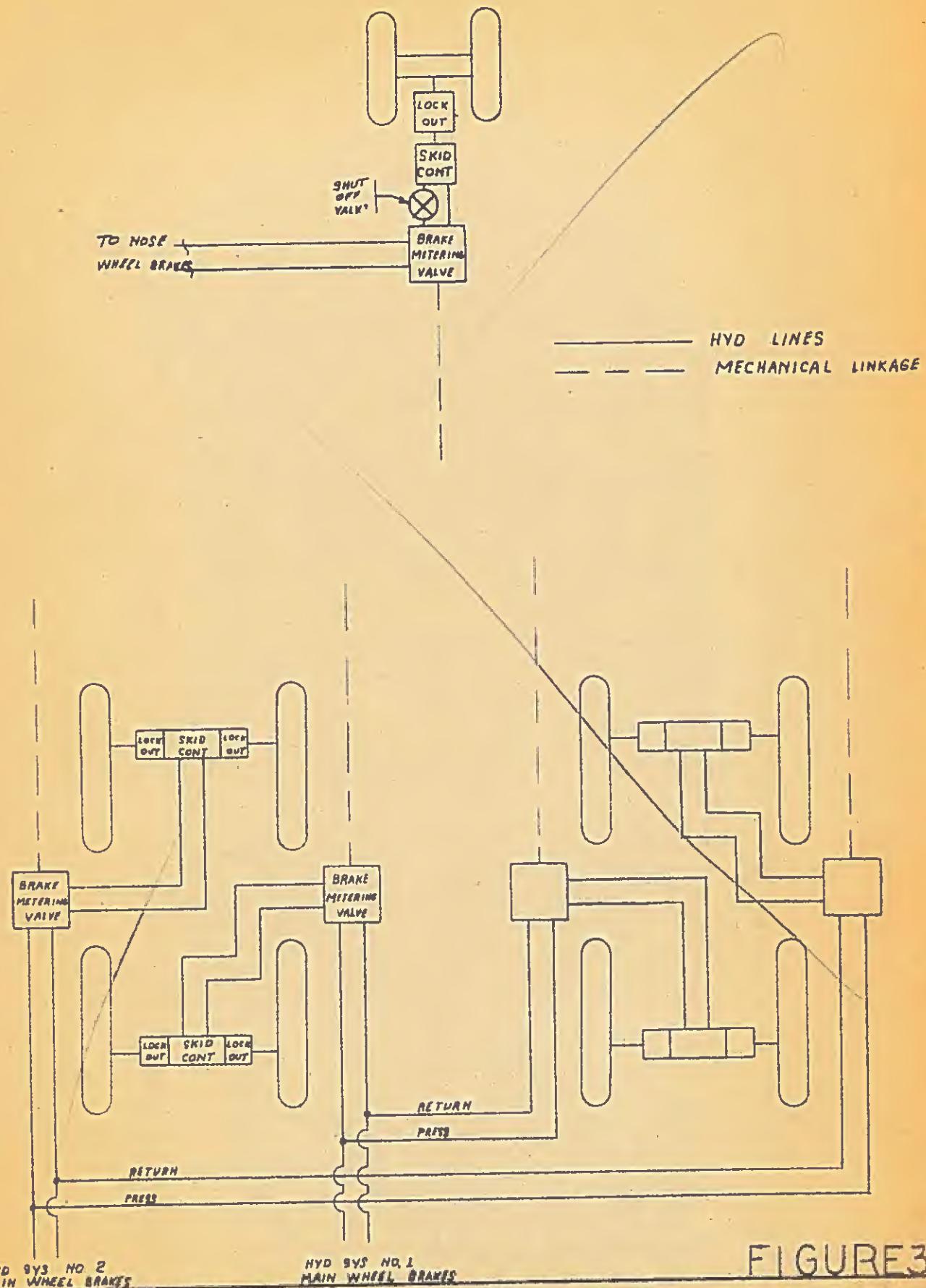
ANALYSIS
PREPARED BY R. MOLLOY
CHECKED BY T. J. DIAZ
REVISED BY

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO

PAGE 388
REPORT NO. 20-22-002
MODEL
DATE

HYD WHEEL BRAKE SCHEMATIC

8-18-56



CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC. NO.: ZD-22-C02

DATE: 15 March 1957

CUSTOMER: Trans-world

MCL 10,021 dtd 4 Feb. 1957

CHANGE NO.: 38

MODEL: (880) 22-1

TITLE: VHF Communication System; Transmitter-Receiver-Change in Type-
REFERENCE: TWA Ltr. 880-69 dtd 28 Jan. 1957

ORIGIN: Customer Request, Collins VHF Communications Equipment in lieu
of a combination of Collins-Bendix.

REASON FOR CHANGE:

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty	
<u>-45-5</u>	<u>-45.5</u>	<u>-12513</u> Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: * None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
(Commercial)

DATE:

15 March 1957

Change No. 38

TITLE: VHF Communication System; Transmitter-
Receiver - Change in Type:

ORIGIN: Customer Request. REFERENCE: TWA Ltr. 880-69
dtd 28 Jan. 1957

REASON FOR CHANGE: Customer request Collins VHF Com-
munications Equipment in lieu of a combination of Collins-
Bendix.

DESCRIPTION OF CHANGE:

Page A-5 Appendix I-C Electronic Equipment
VHF Communication

Change: To read as follows:

2 Transmitters	Collins	17L-7
2 Receivers	Collins	51X-2

Effect on Weight: -45.5 lb
Effect on Balance: -12513 in. lb
Effect on Performance: None

TWA- Change no. 37
(Rejected)

TWA- Change no. 56

(Cancelled)

C O M P A N Y
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

NCL 10,151 Dtd 17 October 1957

CHANGE NO: 35E

MODEL: (880) 22-1

TITLE: Engine Starting System, Changes to

Reference: TWA Teletex of 27 November 1957 between E. E.
ORIGIN: Cannaday, W. H. Spannuth and Convair representatives.

REASON FOR CHANGE: Customer request for alternate proposal on engine
starting system.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty 20 lbs by 5.0 +19.7 lbs	Oper. Wt. Empty 20 lbs by 5.0 +19.7 lbs	+12,469 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

*Note - Sales Order was issued for CCP 35D - this
CCP is for record purposes which
shows Change aggregated to CCP 35D*
Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANE AFFECTED:

See Sales Order 1-83 for details

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

Title: Engine Starting System, Changes to

Origin: Reference: TWA Telecon of 27 November 1957 between E. H. Cannaday, W. H. Spannuth and Convair representatives.

Reason for Change: Customer request for alternate proposal on engine starting system.

Description of Change:

Page 46, Paragraph 3.12.4.4 STARTERS:

Revise paragraph to read as follows:

"An air turbine starter control valve shall be provided for each engine. Space provisions shall be made in No. 3 engine pod and air starting duct for the later installation of an in-line combustor. A ground air starting connection shall be installed in the fuselage forward of the front spar. A ground starting fitting shall be installed in No. 3 engine pod for ground combustor cart in-line starting of the engine. A cross-over engine bleed system shall be provided to permit starting of the other engines after the initial engine is started from the ground combustor source or from the ground air starting connection. It shall be possible under "Standard Day" conditions to start all four engines within two and one-half minutes from beginning of the first start to the time the fourth engine reaches ground idle speed. This is based on individual engine starts.

Page 55, Paragraph 3.12.12 STARTING SYSTEM:

Add the following to the end of the paragraph:

"An additional control switch, to be energized from an outside source, shall be provided to permit ground combustor cart starting from the cockpit. An electrical plug shall be provided at No. 3 nacelle for this purpose."

Page 64, Paragraph 3.15.2 PNEUMATIC SYSTEM, HIGH PRESSURE:

Delete the words "Not applicable" appearing after paragraph title and substitute "(Space provisions)".

Page 64, Paragraph 3.15.2.1.1 COMPRESSOR OPERATION:

Delete the words "Not applicable" appearing after paragraph title, and change paragraph title to "COMPRESSOR (Space provisions)", and add the following under the new paragraph heading:

"Space provisions shall be made in the left hand main wheel well for the later installation of a 6-8 CFM (cubic feet per minute) 3000 psi, 4-stage air compressor for supplying high pressure air for in-line starting system."

Add the following new paragraph to Page 64:

"3.15.2.1.2 AIR STORAGE BOTTLES: (Space provisions) Space provisions shall be made in the area between the air conditioning compartment and the forward cargo compartment for the later installation of two 2550-cubic inch capacity and one 900-cubic inch capacity air storage bottles."

"3.15.2.1.3 WATER SEPARATION: (Space provisions) Space provisions shall be made for the later installation of the following equipment:

- a. A ten-cubic inch mechanical separator sufficient for three hours running time of compressor.
- b. A silica gel type chemical dryer and holder.
- c. A ten-micron filter."

Figure 3.12-1 ENGINE STARTING SYSTEM

Figure 3.12-2 SCHEMATIC-ENGINE FUEL SUPPLY, SUBSYSTEM

Revise above figures as required to reflect above changes.

Effect on Weight Empty: +19.7 pounds

Effect on Balance: +12,469 inch-pounds

Effect on Performance: None

CC.WAIN: SD

Hughes Tool Company
Change No. 35E

Page 3 of 3

The following not to appear in Specification language:

The following equipment items form a part of this change:

"1 DPDT Control Switch
1 Ground Combustor Cart Connection
1 Electrical Plug (in No. 3 Pod)"

Manufacturer's name and/or part number will be furnished for equipment items, when available, on Customer's acceptance of this Change No. 35E.

CO N V A I R
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-00 2

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10, 151 Dtd 17 October 1957

CHANGE NO: 35D

MODEL: (880) 22-1

TITLE: **Engine Starting System, Changes to**

ORIGIN: Reference: TWA TWX dated 14 October 1957

REASON FOR CHANGE: Customer request for alternate proposal on engine starting system

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
+80 lbs	+80 lbs	+56404	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 35B

Page 1 of 3

Title: Engine Starting System, Changes to

Origin: Reference: TWA TWX dated 14 October 1957

Reason for Change: Customer request for alternate proposal on engine starting system.

Description of Change:

Page 46, Paragraph 3.12.4.4 STARTERS:

Revise paragraph to read as follows:

"An air turbine starter control valve shall be provided for each engine. Space provisions shall be made in No. 3 engine pod and air starting duct for the later installation of an in-line combustor. A ground air starting connection shall be installed in the fuselage forward of the front spar. A ground starting fitting shall be installed in each engine pod for ground combustor cart in-line starting of the engine. A cross-over engine bleed system shall be provided to permit starting of the other engines after the initial engine is started from the ground combustor source or from the ground air starting connection. It shall be possible under "Standard Day" conditions to start all four engines within two and one-half minutes from beginning of the first start to the time the fourth engine reaches ground idle speed. This is based on individual engine starts.

Page 55, Paragraph 3.12.12 STARTING SYSTEM:

Add the following to the end of the paragraph:

"Four additional control switches, to be energized from an outside source, shall be provided to permit ground combustor cart starting from the cockpit. An electrical plug shall be provided at each nacelle for this purpose."

Page 64, Paragraph 3.15.2 - PNEUMATIC SYSTEM, HIGH PRESSURE:

Delete the words "Not applicable" appearing after paragraph title and substitute "(Space provisions)".

Page 64, Paragraph 3.15.2.1.1 COMPRESSOR OPERATION:

Delete the words "Not applicable" appearing after paragraph title, and change paragraph title to "COMPRESSOR (Space provisions)", and add the following under the new paragraph heading:

"Space provisions shall be made in the left hand main wheel well for the later installation of a 6-8 CFM (cubic feet per minute) 3000 psi, 4-stage air compressor for supplying high pressure air for in-line starting system."

Add the following new paragraphs to Page 64:

"3.15.2.1.2 AIR STORAGE BOTTLES: (Space provisions) Space provisions shall be made in the area between the air conditioning compartment and the forward cargo compartment for the later installation of two 2550-cubic inch capacity and one 900-cubic inch capacity air storage bottles."

"3.15.2.1.3 WATER SEPARATION: (Space provisions) Space provisions shall be made for the later installation of the following equipment:

- a. A ten-cubic inch mechanical separator sufficient for three hours running time of compressor.
- b. A silica gel type chemical dryer and holder.
- c. A ten-micron filter."

Figure 3.12-1 ENGINE STARTING SYSTEM

Figure 3.12-2 SCHEMATIC-ENGINE FUEL SUPPLY, SUBSYSTEM

Revise above figures as required to reflect above changes.

Effect on Weight Empty: +80 pounds
Effect on Balance: +56,404 inch-pounds
Effect on Performance: None

CONVAIR: S. D.

Hughes Tool Company
Change No. 35D

Page 3 of 3

The following not to appear in specification language:

The following equipment items form a part of this change:

"4 DPDT Control Switches
4 Ground Combustor Cart Connections
4 Electrical Plugs (in Pod)"

Manufacturer's name and/or part number will be furnished for equipment items, when available, on Customer's acceptance of this Change No. 35D.

TWA-Change No. 35-B

(Rejected)

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO, CALIFORNIA

COMMERCIAL CHANGE PROPOSAL

SPEC NO.: ZD-22-002

DATE:

CUSTOMER: Hughes Tool Company

MCL 10,001 DTD Rev. 9-9-58

CHANGE NO: 34A

MODEL: (880) 22-1

TITLE: Passenger Service Supply Cabinet, Provisions for

ORIGIN: TWA requested by Letter No. 880S-231, dated 2 September 1958

REASON FOR CHANGE: Customer requested, and revision to CCP No. 34.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
GUAR. WT. EMPTY	OPER. WT. EMPTY	0 INCH LB.	
0	0	0	INCH LB.

EFFECT ON GUARANTEED PERFORMANCE: *

None

- NEGLECTABLE CHANGES WILL BE ACCUMULATED AND
TOTALS REFLECTED IN A FUTURE CHANGE PROPOSAL

ACCEPTANCE OF THIS CHANGE IS DEPENDENT UPON
PRIOR ACCEPTANCE OF THE FOLLOWING CHANGES:

ENGINEERING APPROVAL

1. LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

RECURRING:

NON-RECURRING:

TOTAL:

ACCEPTED:

CONVAIR, A DIVISION OF GENERAL DYNAMICS CORP.

८४

DATE:

CONVAIR: SD

Hughes Tool Company
Change No. 3⁴A

Title: Passenger Service Supply Cabinet, Provisions for
Origin: TWA requested by Letter No. 880S-231, dated 2 September 1958
Reason for Change: Customer requested, and revision to CCP No. 3⁴.

Description of Change:

Page 109, Paragraph 3.19.2.3.1 PASSENGER SERVICE SUPPLY CABINET:

Revise the paragraph to read as follows:

"Provisions shall be made for the stowage of one Buyer furnished passenger service supply cabinet, Buyer No. 106, on the floor of the left hand aft coat compartment. These provisions shall consist of one tie-down strap assembly to secure the cabinet, measuring 9-1/2 inches high, 14.0 inches wide and 12-1/4 inches deep, to the floor."

Effect on Weight Empty: 0
Effect on Balance: 0
Effect on Performance: None

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPFC NO: 70-22-C02

DATE: 18 April 1957

CUST. NAME: Hughes Tool Company

NCL 10,032 DTD 28 March 1957

CHANGE NO: 33

MODEL: (B80) 22-1

TITLE: Air Conditioning - Description of Ground Connection Relocation

ORIGIN: Customer Requested (TWA) Ref.: Review of Mock-up, Page 20
Item 7, dated 12 March 1957

REASON FOR CHANGE: Relocate to reduce time required during engine starts
and reduce weight.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
-26.0	-26.0	-10,400	Inch-lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

EARLIEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

REF ID:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

CONVAIR: SD

18 April 1957
Change No. 33

Title: Air Conditioning - Description of Ground Connection Relocation

Origin: TWA Requested - Ref.: Review of Mock-up, Page 20, Item 7,
dated 12 March 1957

Reason for Change: Relocate to reduce time required during engine starts
and reduce weight of system.

Description of Change:

Page 123, Paragraph 3.20.1.12

Change sentence starting on 6th line of paragraph to read:

A ground test connection shall be located on the R.H. side of
fuselage near the front wing spar to permit ground pressure
testing of the high pressure duct system,

Figure 3.20-1 Air Conditioning schematic to be revised to reflect
relocation of connection.

Effect on Weight:	-26
Effect on Balance:	-10,400 inch-lb
Effect on Performance:	None

TWA - Change No. 32

(Rejected)

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ED-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL --- Dtd ---

CHANGE NO: 31A

MODEL: (880) 22-1

TITLE: Incorporation of Use of Solid Co-Axial Cable

ORIGIN: Customer requested, Ref.: RFC No. 3.17-14, Item 3, Part IV of
C.O. No. 1 to Detail Specification and TWA Letter 880-192 dated
24 June 1957.

REASON FOR CHANGE:

To reduce weight of long, semi-permanent installed
sections, and revision to CCP No. 31 dated 9 May 1957.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty - 20.0 lb	Oper. Wt. Empty - 20.0 lb	- 12,000 Inch-lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 31A

Title: Incorporation of Use of Solid Co-Axial Cable

Origin: Customer requested, Ref.: RFC No. 3.17-14, Item 3, Part IV
of C. O. No. 1 to Detail Specification and TWA Letter 880-192
dated 24 June 1957.

Reason for Change: To reduce weight of long semi-permanent installed
sections, and revision to CCP No. 31 dated 9 May 1957

Description of Change:

Page 93, Paragraph 3.17.1.3.7 - ANTENNA TRANSMISSION LINES:

Delete paragraph and substitute the following:

"All flexible antenna co-axial transmission lines shall be routed through fixed metal conduit. The conduit installation shall permit removal and replacement of any antenna co-axial line without removal or installation of cable co-axial fittings in the aircraft. The conduit shall not be used as the outer shield. Deviation from this requirement for conduit will be permitted only when the antenna co-axial line involved is wholly in the radio rack area or installed in an accessible area. Where the co-axial cable length is such as to cause difficulty in cable removal, co-axial fittings shall be installed at each end to permit replacement of a short cable-end segment most subject to wear and damage. For long transmission cable runs, aluminum-clad transmission lines of the semi-permanent, low loss type shall be installed where practical. These transmission lines shall be installed in such manner as to permit reasonable access for replacement. It shall not be necessary to remove permanent structure to gain access to these lines. Termination of these lines shall incorporate short segments of flexible cable to permit routing to the shockmounted rack and to the antenna assemblies. The junction of the flexible segments shall be located to permit easy access to the co-axial connectors for replacement of the flexible end segments."

Effect on Weight Empty: -20 pounds

Effect on Balance: -12,000 inch-pounds

Effect on Performance: None

TWA -

Change No. 31 -

(Rejected)

TWA- Change No. 30-A
(Cancelled)

File

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

CHGRC. NO.: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL --- Dtd ---

CHANGE NO.: 29

MODEL: (880) 22-1

TITLE: A-C Generators, Change from 8000 to 6000 RPM Type

ORIGIN: Contractor initiated.

REASON FOR CHANGE: 8000 RPM units not available

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	
+48.0 lb	+48.0 lb	+37,000 Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Change Order No. 9

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 29

Title: A-C Generators, Change from 8000 to 6000 RPM Type

Origin: Contractor initiated.

Reason for Change: 8000 RPM units not available.

Description of Change:

Page A⁴, APPENDIX I-C, ELECTRICAL EQUIPMENT:

Change last item in Description List as follows:

From: 4 Generator - 40 KVA (8000 RPM) (@ 76 lb ea)
304 lb

To: 4 Generator, 40 KVA, 6000 RPM @ 88.0 lb General Electric
352.0 lb

Effect on Weight Empty: +48.0 pounds
Effect on Balance: +37,000 inch-pounds
Effect on Performance: None

CONVATR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPBC NO: ZD-22-00 2

DATE: _____

CUSTOMER: Hughes Tool Company

MCL _____ Dtd _____

CHANGE NO: 28

MODEL: (880) 22-1

TITLE: Cabin Attendant's Control Panels		
ORIGIN: Ref.: R.F.C. No. 3.19-20		
REASON FOR CHANGE: Customer request to provide a service control panel at each end of cabin.		
	EFFECT ON WEIGHT *	EFFECT ON BALANCE *
Guar. Wt. Empty <u>+ 5.5</u>	Oper. Wt. Empty <u>+ 5.5</u>	<u>+ 10.685</u> Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:	AIRPLANES AFFECTED:
-----------------------------------	----------------------------

SPECIAL PROVISIONS:	EFFECT ON PRICE PER AIRPLANE:
	<u>Recurring:</u> _____
	<u>Non-Recurring:</u> _____
	<u>Total:</u> _____

ACCEPTED:	CONVATR, A Div. of Gen. Dyn. Corp.
------------------	---

BY:	Chief of Contract Administration
	Commercial

CONVAIR:SD

Change No. 28

Title: Cabin Attendant's Control Panels

Origin: Ref.: R.F.C. No. 3.19-20

Reason for Change: Customer request to provide a service control panel at each end of cabin.

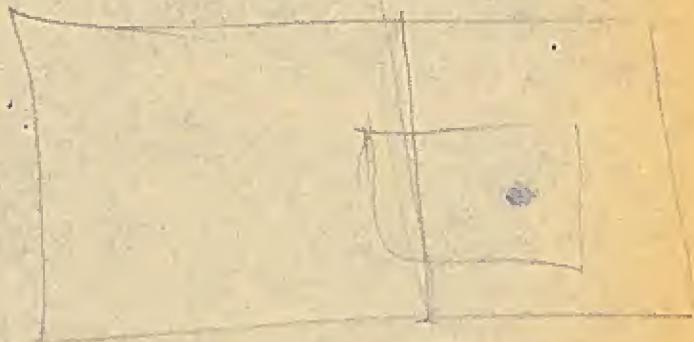
Description of Change:

Page 108, Paragraph 3.19.2.1.3 - CONTROL PANEL:

Revise to read:

"CONTROL PANELS: A cabin attendant's control panel shall be provided at each cabin attendant's seat location (one forward and one rear). These panels shall each contain controls for the following:

- Entrance, passenger and buffet lighting
- Passenger and crew call system
- Service interphone
- Public address system."



Effect on Weight Empty: +5.5 lb

Effect on Balance: +10,685 inch-lb

Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL --- Ptd ---

CHANGE NO: 27

MODEL: (880) 22-1

TITLE:	Provisions for Enlarged Cargo Door for use with Preloaded Baggage Containers.		
ORIGIN:	Customer requested, Reference: RFC No. 3.19-31, and Item 4, Part IV of Change Order No. 1.		
REASON FOR CHANGE:	To allow for later incorporation of preloaded baggage containers.		
EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
+100.0 lb	+100.0 lb	+48900	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 27

Title: Provisions for Enlarged Cargo Door for use with Preloaded
Baggage Containers

Origin: Customer requested, Reference: RFC No. 3.19-31; and Item 4,
Part IV of Change Order No. 1.

Reason for Change: To allow for later incorporation of preloaded
baggage containers.

Description of Change:

Page 30, Paragraph 3.7.1.5.4 - CARGO DOORS:

Add the following sentences to the end of paragraph:

"Ducting, tubing, wiring, etc., shall be routed to allow for the
later addition of an enlarged forward cargo door compatible with
a preloaded baggage container system. The door opening need not
exceed approximately 38 inches fore and aft, and approximately
40 inches measured vertically from the cargo floor."

38" per S.O.

Effect on Weight Empty: +100 pounds
Effect on Balance: +48,900 inch-pounds
Effect on Performance: None

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

REF. NO.: 20-22-002

DATE: 3 May 1957

BUYER: HUGHES TOOL COMPANY

MCL: D.D.

CHANGE NO.: 26

MODEL: (880) 22-1

TITLE: Wing Illumination Lights; Addition of:

ORIGIN: Customer Requested, Ref.: R.F.C. 3.16-54

REASON FOR CHANGE: To provide illumination of the wing leading edges and pylons, for visual inspection at night to detect ice formation, and to light up this area during night service and ground maintenance.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty +17.0 lb	Oper. Wt. Empty +17.0 lb	+8,075	Incl. 100

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurr.

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn.

BY:

BY:

Chief of Contract Administration
Commercial

TYPE:

CONVAIR: SD

3 May 1957
Change No. 26

Title: Wing Illumination Lights; Addition of

Origin: Customer Requested, Ref.: R.F.C. 3.16-54

Reason for Change: To provide illumination of the wing leading edges and pylons, for visual inspection at night to detect ice formation, and to light up this area during night service and ground maintenance.

Description of Change:

Page 7⁴, Add new paragraph:

3.16.8.1.5.1 WING ILLUMINATION LIGHTS: A white light shall be installed on the left hand and right hand side of the fuselage forward of the wing to illuminate the wing leading edge and pylons. Control shall be at the pilot's station.

Page 8⁴, Add under heading "LIGHTING" a new item as follows:

"14. Wing Illumination Lights"

Effect on Weight Empty: +17.0 lb
Effect on Balance: +8,075 inch-lb
Effect on Performance: None

GEILVALK
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC ID: ZB-22-002

DATE: 28 May 1957

RIGHT MGR: Hughes Tool Company

MCL _____ ptd _____

CHANGE TO: 25

MODEL: (880) 22-1

FILE: Description of Pitot Static System

OUTLINE: Ref.: R.F.C. No. 3.14-15

REASON FOR CHANGE: Customer request to devine specification language as revised by the above reference R.F.C.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty + 4.5 lb	Oper. Wt. Empty + 4.5 lb	+ 684 Inch lb.

PERFECT OR GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATENT PERIOD OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring

non-
metal:

ACCEPTED:

CONVAIR, A DIV. of Gen. Dyn. Corp.

BY: Chief of Contract Administration
Commercial

CONVAIR: SD

1447
779

28 May 1957
Change No. 25

Title: Description of Pitot Static System.

Origin: Ref.: R.F.C. No. 3.14-5.

Reason for Change: Customer request to define specification language as revised by the above noted reference.

Description of Change:

Page 59, Paragraph 3.14.3.2.1 - STATIC SOURCES:

Revise fifth sentence, starting on ninth line, to read:

"A separate static source shall be provided for the auto-pilot system."

In left hand margin, five spaces under above paragraph number, add: "(3.14-15)".

On Figure 3.17-2 add: "(R.F.C. 3.14-15)"

Effect on Weight Empty: +4.5 lb
Effect on Balance: +684 inch-lb
Effect on Performance: None

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPN: 20-22-002

DATE: 9 May 1957

CUSTOMER: Hughes Tool Company

MCL _____ Ltd _____

CHANGE NO: 24

MODEL: (880) 22- 1

TITLE: Inflatable Escape Chutes: Installation of

ORIGIN: Customer Requested, Ref.: R.F.C. 3.19-43

REASON FOR CHANGE: To provide for rapid evacuation from emergency exits.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty + 113.0 lb	Oper. Wt. Empty + 200.0 lb	+ 165,000	Inch-lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

CCP: _____

CONVAIR: SD

9 May 1957
Change No. 24

Title: Inflatable Escape Chutes, Installation of

Origin: Customer Requested, Ref.: R.F.C. 3.19-43

Reason for Change: To provide for rapid evacuation from emergency exits.

Description of Change:

Page 118, Paragraph 3.19.6.3 - EVACUATION PROVISIONS:

Delete paragraph and substitute following:

"Suitable means shall be provided for assisting rapid evacuation from emergency exits, including assist ropes at exits over the wing and at the forward main entrance door. Four inflatable escape chutes shall be provided, and shall be stowed one each adjacent to passenger entry doors, and one each adjacent to galley service doors. The design objective for the installation shall be such that the chute (starting from the stowed position) can be operated by the attendant and be available for use in 10 seconds maximum time. The installation shall be capable of withstanding 60 mph winds acting against the sides of the chute in the extended position. These items are included in Useful Load - Emergency Equipment.

Page A-16, APPENDIX I-C - FURNISHINGS:

After "Escape Chutes", change "(non-inflatable)" to "(inflatable)".

Effect on Weight Empty: +113.0 pounds

Effect on Balance: +165,600 inch-pounds

Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,109 Ptd - - -

CHANGE NO: 23A

MODEL: (880) 22-1

TITLE: Buffets, Changes to

ORIGIN: Minutes of TWA Galley Mock-Up Reviews of 14 Dec. 1956 and 26, 27 Feb. 1957, TWA Ltr. 880-128, dated 12 Apr. 1957, and TWA Ltr. 880-144, dated 13 May 1957, and verbal requests by Messers. Homieir and Walker on 27 June 1957.

REASON FOR CHANGE:

Customer requested.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty <u>+513 lb</u>	Oper. Wt. Empty <u>+462 lb</u>	<u>+ 340166</u> Inch-Lb <u>+ 294563</u> Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

DATE: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

Hughes Tool Company
Change No. 23A

Page 1 of 4

Title: Buffets, Changes to

Origin: Minutes of TWA Galley Mock-Up Reviews of 14 December 1956 and 26, 27 February 1957, TWA Letter 880-128 dated 12 April 1957 and TWA Letter 880-144, dated 13 May 1957, and verbal requests by Messers Homieir and Walker on 27 June 1957.

Reason for Change: Customer requested.

Description of Change:

Page 107, Paragraph 3.19.2.1 - BUFFET:

Revise paragraph to read as follows:

"A buffet comprised of three sections shall be provided. The two forward sections shall be 32 inches fore and aft including work surface extensions. The aft section shall be 28.25 inches fore and aft. Additional (stowable) counter space shall be provided as shown in Figure 3.19-8. The buffet installation insert retention shall be designed to the loads specified in Paragraph 3.4.4 of this specification."

Paragraph 3.19.2.1.1 - BUFFET:

Change paragraph title to: "BUFFET INSTALLATION" and revise paragraph to read as follows:

"Buffet units shall be removable for ease of maintenance and servicing. Weights of items and materials are listed in APPENDIX I-C. Any change in weight resulting from Buyer request for change over those weights listed in APPENDIX I-C shall revise the airplane empty weight guarantee."

Page 108, Paragraph 3.19.2.1.2 - BUFFET AND EQUIPMENT:

Revise paragraph to read as follows:

"The design of each of these sections of the buffet shall be such that identical functions as listed below may be provided at each section with the exception that no drinking water or coffee maker will be provided at the No. 1 (fwd) section. The sections shall be identified from forward to aft as No. 1, No. 2 and No. 3.

CONVAIR: SD

Hughes Tool Company
Change No. 23A

Page 2 of 4

ITEM

NUMBER OF ITEMS IN BUFFET SECTION

	No. 1	No. 2	No. 3
* Escape Chute Compt. Provisions	1	0	0
** Tray Carrier (7-meal capacity)	6	6	4
* Food Warming Oven (14-meal capacity)	3	3	2
Casserole Carrier (14-meal capacity)	3	3	2
** Automatic Coffee Maker	0	1	1
Refuse Trap Door	1	1	1
Hot Water Heater (2-qt capacity)	1	0	0
2-gallon Liquid Container	1	0	0
Filter	1	1	1
Adjustable Vent in Roll Warmer Door	1	1	1
Hot Water Faucet	1	1	1
Cold Water Faucet	1	1	1
Passenger Drinking Water Cup Dispenser	0	1	1
Passenger Drinking Water Outlet	0	1	1
Passenger Cup Disposal Door	0	1	1
Switch Panel	1	1	1
Water Cooler (1-qt capacity)	0	1	1
Coffee Warmer (100-watt)	1	1	1
Hot Cups	1	1	1
Hot Cup Electrical Receptical	1	1	1
Wet and Dry Refuse Container (with per- orated removable divider)	1	1	1
* Roll Warmer Oven (180°F)	1	1	1
Holler Carrier	1	1	1
** 3-drawer Refrigerator Cabinet	1	1	1
** Glass Carriers and Miniature Liquor Cabinet	1	1	1
* Miscellaneous Stowage Compartment	As available		
* Load Carrying Door			
** No Door			

Refer to: APPENDIX I-B for Customer furnished and Customer installed items.
All other items to be Contractor furnished - Contractor installed.

CONVAIR: SD

Hughes Tool Company
Change No. 23A

Page 3 of 4

Delete the following figures from specification:

"Figures: 3.19-5, 3.19-6, 3.19-7 and 3.19-8", and substitute the following new figures:

"Figure: 3.19-5, Rev. B, No. 1 Buffet, Lkg. Fwd @ Sta. 328
Figure: 3.19-5A, Rev. A, No. 1 Buffet, View Looking Outb'd
Figure: 3.19-6, Rev. B, No. 2 Buffet, View Looking Aft
Figure: 3.19-6A, Rev. A, No. 2 Buffet, View Looking Outb'd
Figure: 3.19-7, Rev. B, No. 3 Buffet, View Looking Aft @ Sta. 1296.12
Figure: 3.19-7A, Rev. A, No. 3 Buffet, View Looking Outb'd
Figure: 3.19-8, Rev. B, Plan View - R.H. Side"

Page 7, Paragraph 1.3 - WEIGHT INCREASE:

Revise paragraph to read as follows:

"Any change in weight of Buyer vended or Buyer furnished items shall be compensated for by a corresponding change in the guaranteed weight empty. Refer to APPENDIX I-B for list of Buyer vended and Buyer furnished items and their associated weights."

Add new Page A1-1, APPENDIX I-B, CUSTOMER FURNISHED - CUSTOMER INSTALLED EQUIPMENT:

<u>No.</u>	<u>Description</u>	<u>Weight</u>
** 13	Tray Carriers (7-meal per carrier) @ 11 lbs ea	143
** 3	Glass Carriers and Liquor Miniature Cabinets @ 11 lbs ea	33
** 3	Hot Cups @ 3 lbs ea	9
** 7	Casserole Carriers @ 4 lbs ea	28
** 3	Roll Carriers @ 3 lbs ea	9
** 3	Refrigerated Cabinets @ 15 lbs ea	45
*** 1	2-gallon Liquid Container @ 14 lbs ea	45
*** 3	Tray Carriers @ 11 lbs ea	14
*** 1	Casserole Carrier @ 4 lbs ea	33
**	Standard Useful Load	4
***	Added items for Alternate Load with Maximum Buffet Capacity <u>not</u> included in Weight Empty or Standard Useful Load.	

Page A14, APPENDIX I-C, FURNISHINGS:

Change 21st item "Buffet" as follows:

From: "ARM"

To: "3"

CONVAIR: SD

Hughes Tool Company
Change No. 23A

Page 4 of 4

Page A15, APPENDIX I-C, FURNISHINGS:

Change 17th item, "Buffet Structure" as follows:

From: "3 Buffet Structure - (2) 30-inch
(1) 27-inch"
(Including (2) coffee makers, drawers and storage) 503 lbs

To: "3 Buffet Sections (excluding Buyer furnished
items noted in APPENDIX I-B)" 730 lbs

The following is not to be included in the Specification language:

"Notes on Deviation of Weights - TWA, Buffets per CCP 23A

The weight empty of 503 lbs., as changed from Specification Page A15, was the basic Specification allowance for the buffet of 217 lbs., increased by the estimated -286 lbs. noted in R.F.C. 3.19-49 and was listed in the Specification Appendix as the best estimate of that time for a final empty buffet weight.

However, since the R.F.C. was not incorporated in the Specification and the weight empty figure of 80,650 lbs. had not been modified due to a buffet change, the difference between the original basic buffet of 217 lbs. and the current empty buffet weight of 730 lbs. is the -513 lbs. shown on this CCP 23A."

Increase -

Weight Empty:	+513 pounds
Useful Load:	- 51 pounds
Oper. Weight Empty:	+462 pounds

Effect on Balance -

Weight Empty:	+340166 inch-pounds
Useful Load:	- 45603 inch-pounds
Oper. Weight Empty:	+294563 inch-pounds

Effect on Performance: None

CO N V A I R
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,192 Dtd 11 February 1958

CHANGE NO: 22E

MODEL: (880) 22-1

TITLE: Water System, Single 50-Gallon Tank, Single Pump; Change to

ORIGIN: RFC 3.19D-10, Meeting of TWA and Convair representatives on 8 and 10 January 1957, TWA TWX dated 23 August 1957, and Meeting of TWA and Convair representatives on 3, 4 and 5 February 1958.

REASON FOR CHANGE:

To provide increased water capacity and pressurized water system in lieu of gravity type, and revision to CCP No. 22D.

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty	Oper. Wt. Empty	
0	+167.0 lbs	+157,31 ¹ ₄ Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____

Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

Hughes Tool Company
Change No. 22E

Page 1 of 2

Title: Water System, Single 50-Gallon Tank, Single Pump; Change to

Origin: RFC 3.19D-10, Meeting of TWA and Convair representatives on 8
and 10 January 1957, TWA TWX dated 23 August 1957, and Meeting
of TWA and Convair representatives on 3, 4 and 5 February 1958.

Reason for Change: To provide increased water capacity and pressurized
water system in lieu of gravity type; and revision to
CCP No. 22D.

Description of Change:

Page 57, Paragraph 3.14.1.4 FLIGHT ENGINEER'S INSTRUMENTS:

Add the following items to the instrument list:

"One low water pressure warning light"

"One water pump switch (single-pole, dual throw)"

Page 108A, Paragraph 3.19.2.1.4 WATER SYSTEM:

Delete the paragraph and substitute the following:

"A pressurized potable water system shall be provided to supply the
lavatory wash basins and buffets. Filters will be provided in buf-
fets which have coffee makers or drinking water outlets. The system
shall provide for draining on the ground. The tank capacity shall
be 50 gallons of water with an adequate air space to act as a pres-
sure reservoir. Means for filling on the ground at a rate of at
least 10 gallons per minute shall be provided. An overflow pipe from
the tank shall visually indicate at the ground service connection
when the tank is full. The system shall be located and designed to
prevent freezing in flight. An air pump shall be provided; and mount-
ing and wiring provisions for a second pump shall be made. The pump
assembly shall be rated for continuous duty operation.

The supply tank shall be designed to ensure that the last remaining
10 gallons in the tank will supply only the buffets.

Suitable controls shall be located on the flight engineer's panel
for the operation of the water system. These controls shall consist
of the following:

1. Low water pressure warning light.
2. Water pump switch (single-pole, dual throw)."

CONTINUED: SD

Hughes Tool Company
Change No. 22E

Page 2 of 2

Page A-14, APPENDIX I-C, FURNISHINGS:

Change the 18th item in the Description List as follows:

From: "1 Tank Assembly, Water"

To: "1 Potable Water Tank (50-gallon capacity)"

Add the following to the bottom of the Description List:

"1 Water System Pump

Alt Buffet Water Filters"

Figure 3.14-3 FLIGHT ENGINEER'S PANEL:

Revise figure as required to reflect this change.

Figure 3.19-2 WATER SYSTEM SCHEMATIC:

Replace present figure in Specification with Enclosure (A).

Enclosure (A): One (1) copy of Figure 3.19-2 WATER SYSTEM SCHEMATIC
(revised 2-17-58)

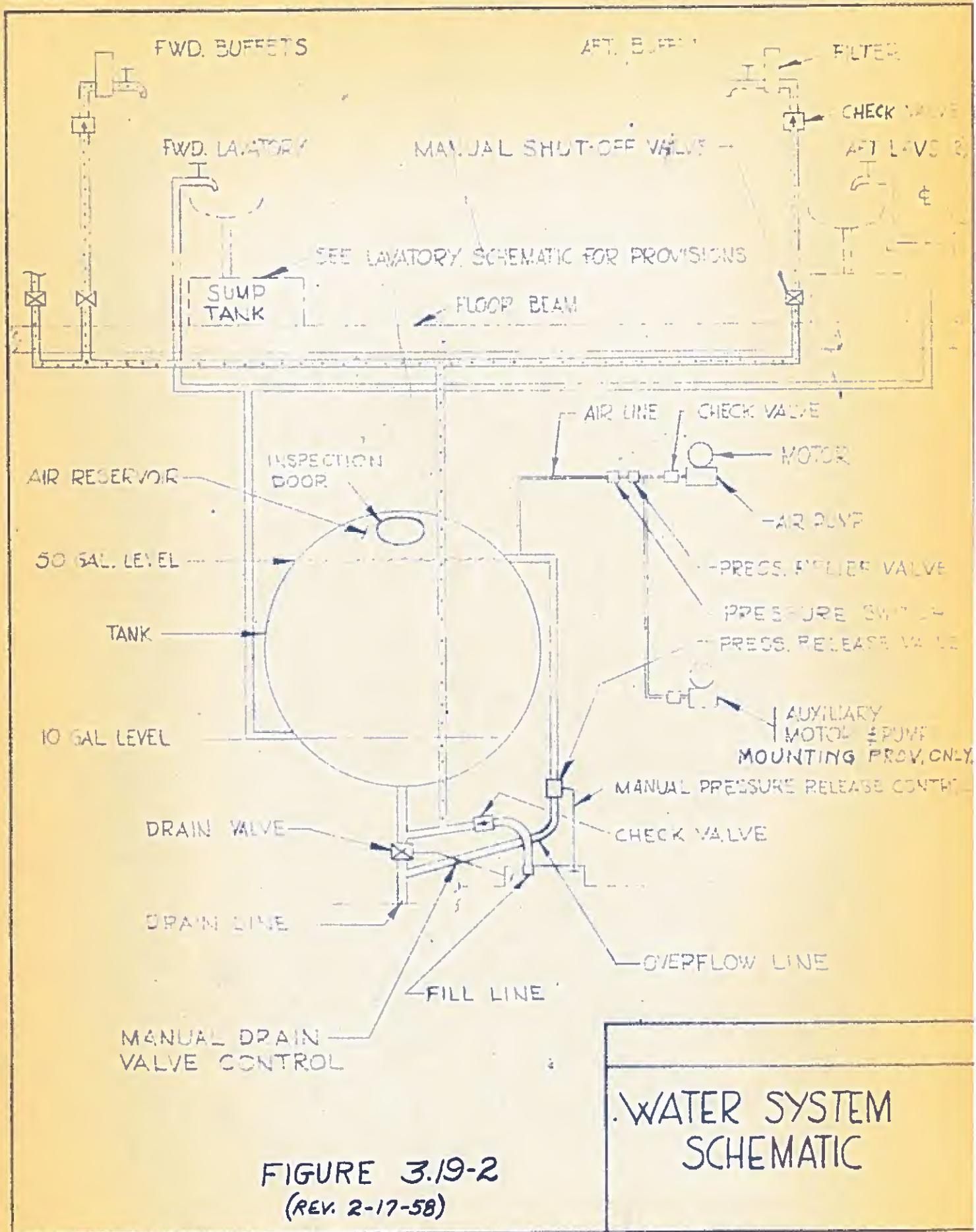
Effect on Weight Empty: 0.0 Effect on Balance: Negligible
*Effect on Oper. Weight Empty: +167.0 lb Effect on Balance: +157,314 inch-lb
Effect on Performance: None

*Includes +167.0 lb of water in Fixed Useful Load reflecting change from 30
gallons as noted in CCP No. 23A to 50 gallons.

ANALYSIS
PREPARED BY
CHECKED BY
REVISED BY

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO

PAGE 118B
REPORT NO. ZD-22-002
MODEL 22
DATE



CONVATR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10,087 DIA 5 July 1957

CHANGE NO: 21A

MODEL: (880) 22-1

TITLE: Fuel System, Change from Pressure System to a Non-Pressurized System

ORIGIN: Contractor Initiated; and customer request for Revision,
Reference: TWA Letter No. 880-261, dated 7 August 1957

REASON FOR CHANGE: To improve safety and reliability of the fuel system; and revision to CCP No. 21 dated 28 June 1957.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty	0	Inch lb.
0	0	0	

EFFECT ON GUARANTEED PERFORMANCE: * None

* Negligible Changes Will be Accumulated and Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVATR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

Date:

CONVAL: SD

Hughes Tool Company
Change No. 21A

Page 1 of 7

Title: Fuel System, Change from Pressure System to a Non-Pressurized System

Origin: Contractor Initiated; and Customer request for revision;
Reference: FWA Letter No. 880-261, dated 7 August 1957.

Reason for Change: To improve safety and reliability of the fuel system
and revision to CCP No. 21, dated 28 June 1957.

Page 47, Paragraph 3.12.9.1 - DESCRIPTION:

Insert the following between the first and second sentences:

"The wing shall incorporate four fuel tank systems of
integral construction; each tank system being divided
into a main and a replenishing compartment."

Page 48, Paragraph 3.12.9.1.1 - OPERATING LIMITS:

In sixth line, insert the word "initial" between "with and"fuel".

In seventh line, add "+" before "130°F".

Delete the fourth, fifth and sixth sentences, starting in the
ninth line, and substitute the following:

"As an emergency condition the system shall be capable of
maintaining proper engine operation at all power settings
up to 25,000 feet altitude without the use of fuel booster
pumps or fuel transfer pumps, with fuselage deck angles
between the limits of 2° nose down to 6° nose up. As a
design objective, the system shall be capable of maintain-
ing proper engine operation at all power settings up to
35,000 feet altitudes without the use of fuel boost pumps
or fuel transfer pumps, between the limits specified above."

Page 48, Paragraph 3.12.9.2 - PUMPS:

Change paragraph title to "BOOST PUMPS"

Revise first sentence to read as follows:

"Each main fuel tank shall be equipped with two ac electri-
cally powered boost pumps."

Change second sentence to read as follows:

"Each fuel supply system to the engine shall be so arranged that failure of either boost pump shall not result in an interruption of thrust throughout all normal flight altitudes".

Delete the words "or transfer" in eighth line.

Change sixth sentence, starting in twelfth line, to read:

"Each pump and its control relay shall receive power from the same source".

Delete eighth sentence, starting in fifteenth line.

Delete the last two paragraphs on Page 48

Page 49, delete the first three sentences and related note.

Page 49, Paragraph 3.12.9.2.1 ENGINE DRIVEN FUEL PUMPS:

Change paragraph number to "3.12.9.2.2"

Add new paragraph as follows:

"3.12.9.2.1 TRANSFER PUMPS: Transfer pumps shall be located as shown in each main tank to supply the boost pump baffle areas, and in each inboard replenishing compartment to supply the corresponding main compartments. Check valves shall also be provided to bypass all transfer pumps to permit flow by gravity from the replenishing area into the main tank area and also from the main tank into the baffle areas. Separate circuit breakers shall be provided for each pump. Each pump and its control relay shall receive power from the same source. The power supply for the transfer pumps shall be diversified so that the loss of any one main bus will not result in loss of more than one transfer pump. As a design objective, 400-cycle AC control relays shall be used".

Page 49, Paragraph 3.12.9.3 - TANKS:

In the first line insert the work "compartmented" between "integral" and "fuel".

In the third line, change "3 percent" to "2 percent".

Page 49, Paragraph 3.12.9.3.1 - CROSS FEED SYSTEM:

Change last sentence to read as follows:

"The indicator lights shall be off when the valves are fully open or fully closed".

Page 50, Paragraph 3.12.9.5.1 - VENT SYSTEM OPERATING LIMITS:

In the first sentence, change limits to read as follows:

"+3.0 psi maximum and -2.0 psi minimum".

In the third sentence, add the word "initial" after "+130,F"

Page 50, Paragraph 3.12.9.7.2 LINE SHUTOFF VALVES:

Revise first sentence to read as follows:

"A shutoff valve shall be installed for each of the four tanks"

Add the following sentences to the paragraph:

"The valves shall incorporate provisions to electrically indicate in-transit positions. The indicator lights shall be off when the valves are fully open or fully closed".

Page 50, Paragraph 3.12.9.7.3 - EMERGENCY SHUTOFF VALVES:

Revise the first sentence to read as follows:

"An emergency fuel shutoff valve for each engine supply system shall be mounted above and adjacent to the horizontal firewall".

Add the following sentences to the end of paragraph:

"The valves shall incorporate provisions to electrically indicate when the valves are closed. The indicator lights shall be on when the valves are fully closed".

Page 51, Paragraph 3.12.9.8 - STRAINERS:

Delete the last sentence and substitute the following:

"An 8-10 mesh screen shall be installed at each fuel pump inlet".

Page 51, Paragraph 3.12.9.9.1 - QUANTITY GAGES:

Revise the fourth sentence, starting in eighth line, to read:

"One measurement system shall be provided for each fuel tank system with provisions to gage either main or replenishing tanks, or total."

Add the following sentence to the end of paragraph:

"The totalizing system shall derive its information from the tank system gage units and not directly from the tank capacitor units".

Page 52, Paragraph 3.12.9.9.5 - FUEL SYSTEM WARNING DEVICES:

Delete the third, fourth and fifth sentences.

Page 52, Paragraph 3.12.9.10 - DRAINAGE PROVISIONS

Change the paragraph title to "FUEL JETTISON PROVISIONS:"

Page 52, Paragraph 3.12.9.10.1 - TANK DRAIN:

Change the paragraph title to "DESCRIPTION", delete the sentence and add the following:

"A fuel jettison system shall be provided and controlled from the pilot's compartment. Each main tank shall be equipped with a hydraulic motor driven jettison pump. Standpipes shall be installed in each main tank to allow jettisoning fuel down to maximum landing weight. Provisions shall be made in each inboard main tank to jettison all inboard fuel by means of a separate control".

Page 52, Paragraph 3.12.9.10.2 - DUMP PROVISIONS:

Delete paragraph number and title

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Page 52, Paragraph 3.12.9.10.3 - FUEL DUMP VALVES:

Delete the paragraph

Page 52, Paragraph 3.12.9.12 - FUEL EVAPORATION CONTROL:

Delete the paragraph

Change Paragraph 3.12.9.12.1 to read "3.12.9.12 - FUEL TEMPERATURE INDICATION".

Page 53, Paragraph 3.12.9.13.1 - UNDER-WING REFUELING:

Add the word "system" to end of first sentence and repunctuate.

Change seventh sentence, starting in eleventh line to read:

"The adapters shall be in accordance with Specification MIL-A-7898, Type A-5 or an adaptation of this type".

Page 53, Paragraph 3.12.9.13.2 - EMERGENCY REFUELING:

In the first line, change "3-1/2 inches" to "3 inches".

Add the word "system" to the end of first sentence, and repunctuate.

Add the following sentence to the end of paragraph:

"Suitable means shall be provided for connecting a ground wire from the refueling truck".

Page 53, Paragraph 3.12.9.13.3 - REFUELING CONTROLS:

Revise the first and second sentences to read as follows:

"A refueling panel shall be located in the aft section on the outboard side of each inboard pylon. The panels shall contain fuel quantity gages, pre-set quantity selectors, pre-check shut-off controls and jacks for microphone, headset, handset, panel light and panel light control switch."

Page 54, Paragraph 3.12.11.2 - GENERAL CONTROLS:

Change last item in controls list from "Fuel dump controls" to "Fuel jettison controls".

Page 57, Paragraph 3.14.1.4 - FLIGHT ENGINEER'S INSTRUMENTS:

Change quantity of third item in instrument list as follows

From: Four fuel booster pump pressure warning lights

To: Eight fuel booster pump pressure warning lights

Change fourth item in instrument list to read as follows:

"Eight fuel transfer pump pressure warning lights".

Change fifth item in instrument list to read as follows:

"Four engine fuel pressure loss indicator lights"

Page 64, Paragraph 3.15.3.1 - DESCRIPTION AND COMPONENTS:

Revise second sentence to read as follows:

"The low pressure pneumatic system shall provide wing anti-icing".

Delete the third sentence, starting on fourth line

Delete the last part of second sentence "(and fuel system pressurization)"

Page 83, Paragraph 3.16.17 - ESSENTIAL POWER, AC POWER:

Under the heading "Fuel and Oil", add the following new item:

"2. Fuel Transfer Pumps (6 of 8)"

Page 85, Paragraph 3.16.17 - ESSENTIAL POWER, DC POWER

Under the heading "Fuel and Oil", revise the list to read as follows:

- "1. Fuel Shut-off
2. Engine Pump Warning Lights
3. Boost Pump Pressure Warning Lights
4. Transfer Pump Warning Lights
5. Oil Low Pressure Warning Lights
6. Booster Pump Relays (4)
7. Transfer Pump Relays (4)

CONVAIR: SD

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Page A24, APPENDIX I-D COMPONENT REMOVAL AND REPLACEMENT TIME:

Delete the following items from the list:

Fifteenth item: "Fuel Pressurization Valve"
Twentieth item: "Fuel Tanks Pressure Regulator"
Thirty-fifth item: "Bleed Air Heat Exchanger"

Add the following new item to the above list as follows:

<u>Replacement Item</u>	<u>No. Men</u>	<u>Manhours</u>	<u>Elapsed Time</u>
Fuel Transfer Pumps	1	1.0	1.0

Revise the following Figures to reflect the above changes:

Figures: 3.12-1 Engine Starting System
3.12-2 Schematic; Engine Fuel Supply, Subsystem
3.12-3 Schematic, Fuel Tank Vent, Subsystem
3.12-4 Schematic, Fuel Jettison, Subsystem

Add 3.12-5 Schematic, Fuel - Defuel Subsystem

Enclosures: (A) Four (4) copies Figure 3.12-1
(B) Four (4) copies Figure 3.12-2
(C) Four (4) copies Figure 3.12-3
(D) Four (4) copies Figure 3.12-4
(E) Four (4) copies Figure 3.12-5

TWA- Change No. 20

No. CCP required, Change is Covered
in CCP Summary No. 2

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO, CALIFORNIA

COMMERCIAL CHANGE PROPOSAL

SPEC NO.: ZD- 22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL _____ DTD _____

CHANGE NO: 19JMODEL: (880) 22-1TITLE: Manufacturer's Name and/or Part NumberORIGIN: Buyer approved specific designation for items of Contractor
Furnished equipment as noted.REASON FOR CHANGE: To identify equipment items listed in Appendix I-C.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
GUAR. WT. EMPTY	OPER. WT. EMPTY	0 INCH LB.	
0	0	0	INCH LB.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* NEGLIGIBLE CHANGES WILL BE ACCUMULATED AND
TOTALS REFLECTED IN A FUTURE CHANGE PROPOSALACCEPTANCE OF THIS CHANGE IS DEPENDENT UPON
PRIOR ACCEPTANCE OF THE FOLLOWING CHANGES:

ENGINEERING APPROVAL

LATEST DATE OF ACCEPTANCE:	AIRPLANES AFFECTED:
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SPECIAL PROVISIONS:	EFFECT ON PRICE PER AIRPLANE: RECURRING: _____ NON-RECURRING: _____ TOTAL: _____
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ACCEPTED: _____

CONVAIR, A DIVISION OF GENERAL DYNAMICS CORP.

BY: _____

DATE: _____

CONVAIR, D.D. 6-1217A

ONVAIR: SD

Hughes Tool Company
Change No. 19J

Page 1 of 10

Title: Manufacturer's Name and/or Part Number

Origin: Buyer approved specific designation for items of Contractor furnished equipment as noted.

Reason for Change: To identify equipment items listed in Appendix I-C.

Description of Change:

APPENDIX I-C Change or add manufacturer's names and/or part numbers to items noted so as to read as follows:

Page No.	Quan Reqd	Description	Manufacturer	Part or Spec. Number
A-2	<u>POWER PLANT EQUIPMENT:</u>			
	<u>FUEL SYSTEM EQUIPMENT</u>			
16	Booster Pump Assy.		Thompson Prod.	TB-141100-4
16	Booster Pump Housing (Was: 8-Booster Pump Assy Consisting of Pump XTB-141000 Housing XTB-139900)		Thompson Prod.	TB-139900-2
4	Emergency Fuel Shutoff Valve		General Con	AV16B1421D
A-2 (Cont)	<u>Cap Pressure Fuel Servicing</u> (Flush)			
4			Parker	1327-575806M1
A-3	<u>ELECTRICAL EQUIPMENT</u> <u>EXTERIOR LIGHTS</u>			
1	Light, Tail Position (Was: Tail Position Light)		Grimes	B-7890-5
1	Light, Dome Wheel Well (Was: Nose Wheel Well Light)		Grimes	31595-23D
2	Landing Light, Retractable		Grimes	40285A-4615
1	Auxiliary Landing Light (L.H. Signal Light)		Grimes	40205-1-4559
1	Auxiliary Landing Light (R.H. Signal Light)		Grimes	40205-2-4559
2	Taxi Turn-Off Light		Grimes	30950-4551

A-3 (Cont)

ELECTRICAL EQUIPMENT
EXTERIOR LIGHTS

Delete: 2 Position Lamp
1 Tail Light, Red
1 Tail Light, White

INTERIOR LIGHTS

AR	Light, Gen. Flood Emerg. Cockpit (Was: Cockpit Light)	Grimes	30750-1
AR	Light, Fluorescent - In- struments (Was: Cockpit Light)	Luminator	L-15481
6	Light, Aisle (Was: Ceiling and Aisle Light)	Luminator	L-14474
2	Light, Coat Compartment (Was: Coat Compartment Light)	Luminator	L-14487
6	Light, Buffet (Was: Buffet Compartment Light)	Luminator	L-14475
13	Cargo Dome Light (Was: Belly Cargo Dome Light)	Soderberg	S-1178
2	Lavatory Compartment Light (Vertical)	Luminator	L-14481-1
2	Lavatory Compartment Light (Horizontal)	Luminator	L-14483
107	Passenger Reading Light (Was: Passenger Reading Light L.H. and R.H.)	Airite Pro- ducts Inc.	7019-1
2	Light, Exit (Was: Service Door Light)	Luminator	L-14476
4	Light Emergency Exit (Was: Service Door Light)	Luminator	L-14477
<u>Delete:</u>	AR Accessory Compartment Light 3 Return to Cabin Signs 3 Lavatory Occupied-Vacant Signs (Bilingual; English and French) 4 Fasten Seat Belt-No Smoking Signs {Bilingual; English and French}		

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Hughes Tool Company
Change No. 19J

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A-4

ELECTRICAL EQUIPMENT

AR	Electrical Equipment		
	Racks	Convair	22-61010
1	Warning Horn	Sperti-Faraday	430M1
1	Battery Storage Nickel-Cadmium 27.5 Volt	Sonotone	CA-121
2	A-C External Power Contactors (Was: A-C Power Systems Contactors)	Gen. Electric	804C686-Pl
4	Transformer Rectifiers	Chatham	28VS50-1
4	Constant Speed Drives (Including Disconnect @ 79 lb 237.0 lb)	Gen. Electric	2CLKM40B1
4	Constant Speed Drive Load Controllers 24 lb	Gen. Electric	7TAR10AO1

Delete: AR Fuel Quantity Power Units

AR Fuel Quantity Power Units Mounting

Racks

1	Position Light Flasher		
3	Back-Up Contactors		
2	Transformer 3-Phase	Osborn	6784
2	Flare Release Solenoids	Meletron	130

A-5

ELECTRONIC EQUIPMENT
VHF NAVIGATION SYSTEM

<u>Delete:</u>	2	Flight Path Indicator	Eclipse-Pioneer
		Integrated System	Kollsman
		Indicator Machmeter	

			C18135/10-005
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HF COMMUNICATION

1	Antenna (Flush)	Convair	22-14900
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VHF COMMUNICATION

1	Antenna (Faired-In Type)	Convair	22-30105-90
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INSTRUMENT LANDING SYSTEM

1	Antenna (37 PH)	Collins	522-0688-01
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-5 (Cont.)

DISTANCE MEASURING EQUIPMENT TACAN (DUAL)

2 Antennas Electronic Spec. LB-147

ELECTRONIC EQUIPMENT

WEATHER RADAR

1 Antenna Assembly (34" Dish) RCA *M137587
1 Antenna Assembly (34" Dish) RCA **M137587-2
S Effective Ships 2 thru 25
66 Effective Ships 26 thru 31

INSTRUMENTS AND RELATED EQUIPMENT

1	Free Air Temp. Bulb (Was: Outside Air Temp. Bulb)	Lewis	54B-1A
AR	Anti-Icing and Structural Temperature Overheat Indicator		
	Was: Anti-Icing Air Temp. Ind.)	Fenwal	80079-2
3	Rate of Climb Ind. (Was: Cabin Rate of Climb)	Kollsman	DO-7165-10-05
4	Exhaust Temp. Ind.	Honeywell	Type JG-116A- 8
1	Hydraulic Fluid Quantity Gage (Dual)	Simmonds	293028-10645
2	Pressure Indicator (Hydraulic)	U.S. Gauge	SR-07A
1	Indicator, Brake Pneumatic Pressure 2-3/8", 0-100 lb	U.S. Gauge	AW1826AD01
2	Temperature, Ind. Hydraulic Fluid	Lewis	162022
4	Engine Oil Pressure Trans- mitter	U.S. Gauge	ST 104M

<u>Delete:AR</u>	Structural Temp. Overheat Ind.
2	Cabin Compressor Oil Pres- sure (Press.), Transmitter
4	Fuel Flow Transmitter
4	Tachometer Generator

8 (Cont.) 2 Hydraulic Fluid Level Transmitter
2 (Was: System #1 & System #2 Cabin Press. Air Flow Transmitter

A-9

INSTRUMENTS AND RELATED EQUIPMENT

1	Air Bottle 3000 PSI, 300 Cubic Inch (Was: Bottle and Drain Fittings Pneumatic 3000 PSI, 300 Cubic Inch)	Walter Kidde	891545
1	Ram Air Temperature Indicator	Lewis	161C20B
2	Horizon Director Indicator	Eclipse- Pioneer	17810-2A-A
AR	Chassis Flight Command Computer and Amplifier	Kollsman	A33280-00- 001 or B33280-00- 004
2	Warning Light Cabin Compressor Overspeed	Korry	MV 14

REMOTE COMPASS SYSTEM (POLAR PATH)

2	Directional Gyro	Eclipse	17209-1-A
2	Compass Coupler	Eclipse	16049-1-A
2	Flux Gate Transmitter	Pioneer	15013-1-A1
2	Compass Controller	Eclipse	15747-1-A

BENDIX FLIGHT DIRECTOR SYSTEM

1	Vertical Gyro Control	Eclipse	15837-1-C
<u>AUTO PILOT *(BENDIX (E/P) TYPE PB-20)</u>			
1	Vertical Gyro	Pioneer	15837-1-C

A-10

INSTRUMENTS AND RELATED EQUIPMENT

1	Transmitter Angle of Attack	Kollsman	68-40800- 0502
2	Static Selector Valve	Republic Mfg.	1-2560-10

-10 (Cont.)

INSTRUMENTS AND RELATED EQUIPMENT

24	Fuel Quantity Probe	Simmonds	2 ea. 381056 01243 thru 02150 381056 - 02152 thru -02277 02286 -02288 thru -02293
2	Fuel Quantity Indic. Repeater	Simmonds	383093 -01669
2	Fuel Quantity Indic. Repeater	Simmonds	383093 -01670
2	Airspeed - Angle of Attack Ind.	Kollsman	B25685-10-009 or C25685-10-009

Delete: 1 Temperature Probe

-10
cont.pg.INSTRUMENTS AND RELATED EQUIPMENT

4	Tachometer Indicator	Gen.Elect.	8DJ81CAB-Y2
1	Flap Position Indicator	Gen.Elect.	8DJ91BAB-Y2
2	Cabin Temp. Thermometer (Mercury)	Kahl Scient.	
1	Fuel Quantity Totalizer Indic.	Ind.	CN-30255
1	Mach. Switch	Simmonds	393013-01643
1	Airspeed Switch (Was: Mach/Airspeed Switch)	Aero Mechanisms	6249
		Aero Mech- anisms	6248
2	Rate of Climb Indicator	Kollsman	DO-7165-10-001

A-11

HYDRAULIC EQUIPMENT

4	Accumulator, Return Line	Redco	11332-001
2	Accumulator, 100 cu. in.	Redco	8414-002
4	Main System Pumps (Variable Displacement Type)	Ham Stand- ard	532760
1	Auxiliary Electric-Driven Pump	NYAB	165W01008-3
2	Hydraulic Reservoirs System #1 & #2	Airite	6311-7 & 6312-5
2	Ground Test Coupling Return	AeroQuip	30712-S11-1D
1	Flap Selecter Valve	Bertea	38400-303
1	Nose Landing Gear Steering Valve	CPT	9818
7	Check Valve	Parker	1112-589231
		Parker	1112-589234
		Parker	1112-589235

A-11

HYDRAULIC EQUIPMENT (Cont)

		Parker	1112-589226
		Parker	1112-589225
		Parker	1112-589229
		Parker	1112-589230
4	Spoiler Actuating Cylinder, Inboard	Peacock	51165-3
8	Spoiler Actuating Cylinder, Outboard	Peacock	51170-5
1	Stabilizer Actuating Motor	Vickers	MS36-390925ZE-S-484-2
1	Flap Selector Valve	Bertea	38400-303
4	Dual Range Hydraulic Pressure Switch	Hydra	
2	Main Landing Gear Door Cylinder (Aft)	Electric	90018-1
2	Main Landing Gear Actuating Cylinder	Thompson	K-51894
1	Nose Landing Gear Actuating Cylinder	Peacock	51160-5
2	M.L.G. Sequence Valve	Peacock	51195-3
1	N.L.G. Selector Valve	Peacock	51180-3
1	Gage, Emergency Air Bottle (Was: Gage Pressure)	Peacock	51200-3
		Rochester	6901-714
<u>Delete:</u>	2 Gage, Accumulator Air M.L.G.	Rochester	6901
	2 Gage, Accumulator Air (100 cu. in. and (200) cu. in.)		6901-715
	1 Valve, Door Open Emergency	Kidde	891507

A-12

HYDRAULIC EQUIPMENT

2	Valve - Spoiler Outboard	Bertea	40600-301
2	High Pressure Relief Valve	Pneu.	
9	Lockout Cylinder	Draulics	1210-5
1	Antiskid Control Valve	Thompson	K41937-4
4	Antiskid Control Valve (Dual)	Hydro-Aire	38-103A
1	NLG Brake Metering Valve	Hydro-Aire	38-099A
2	MLG Brake Metering Valve	Weston	16650-1
		Hyd.	
		Weston	16640-2
		Hyd.	

A-13

LANDING GEAR EQUIPMENT

8	Main Wheel Tire 39 x 13	U.S. Rubber	C-14TL
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A-14
Cont.pgFURNISHINGS

1	1 Stewardess Switch Panel	Convair	22-63300
2	2 Stewardess Call Chimes (Elec. Switch)	Electro. Switch Control	3001-3

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Hughes Tool Company
Change No. 19J

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A-14
Cont. pg.
1FURNISHINGS (Cont)

3	Lavatory Assist Handle	Convair	22-90920
2	Lavatory Assist Handles	Convair	22-90920-1
4	Lavatory Assist Handles	Convair	22-90920-3
3	Lavatory Coat Hook (Flush Type)	Hartwell	H-148-1
1	Lavatory "Occupied- Vacant" Sign (Bilingual; English and French)	Convair	22-93606 (Fwd)
2	Lavatory "Occupied- Vacant" Sign (Bilingual; English and French)	Convair	22-94604 (Aft)
3	"Fasten, Seat Belt - No Smoking" Signs.	Convair	22-93603 (Cabin)
1	"Fasten Seat Belt - No Smoking" Sign (Bilingual; English and French)	Convair	22-94606 (Club)
1	Lavatory Sign "Return to Cabin"	Convair	22-94603 (Aft)
1	Lavatory Sign "Return to Cabin"	Convair	22-93616 (Fwd)
AR	Buffet Water Filters	EverPure	S1B
1	Disposal Tank and Hardware (Lavatory)	Convair	22-93802 (Fwd)
2	Disposal Tanks and Hard- ware (Lavatory)	Convair	22-94802 (Aft)
1	Water System Pump	Cornelius	30730100
1	Toilet Shroud Fwd.	Convair	2293816
1	Toilet Shroud Aft	Convair	2294809

<u>Delete</u>	4	Emergency Lights	Lumina-
	2	Emergency Lights	tor L-14477

A-14
Cont. pg.
2

1	Static Pressure Port (Alt)
2	Pitot Head

Kollsman A34110-00-003

A-16

FURNISHINGS

*2	Escape Chutes (Inflatable)	Garret Corp.	13D12035
*2	Escape Chutes (Inflatable) (Was: 4 Escape Chutes In- flatable)	Garret Corp.	13D12036
1	Pilots' Door Lock and Key	Adams Rite	2028-4X100

CONVAIR: SD

Hughes Tool Company
Change No. 19J

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A-16

FURNISHINGS

Delete: 2 Pitot Head
1 Static Pressure Alternate
6 Emergency Light

A-17

PRESSURIZATION, ANTI-ICING AND AIR CONDITIONING EQUIPMENT

2	ATM Driven Cabin Compressor	Ham Standard	555150
2	Freon Compressor, Electric	Ham Standard	549206
2	Freon Condenser	Ham Standard	550281
2	Freon Evaporator	Ham Standard	546300
2	Cabin Pressure Regulator and Safety Valve	Air Research	103182-4
2	Cabin Heat Control Valve (Was: Compressor Recircu- lation Valve)	Ham. Standard	535457
2	*Heat Exchanger Cooling Air Shutoff Valve	Air Research	106522
2	**Heat Exchanger Cooling Air Shutoff Valve	Air Research	106522-1
2	Condenser Cooling Air Shut- off Valve	Ham Standard	548333
AR	*Anti-icing Pressure Regulator	Air Research	108594-130
AR	Anti-icing Pressure Regulator	Air Research	108594-130-1
2	Turbine Tachometer (with Amplifier Cabin Compressor	Ham Standard	535461

A-18

OXYGEN EQUIPMENT

2	Regulator and Pressure Re- ducer (Continuous Flow Type) Automatic Passenger Valve with Manual Override (Was: AR Regulator (Passenger Continuous Flow Type)	Alar	5870-100
1	Automatic Passenger Valve with Manual Override)		
3	Smoke Mask	Scott	6849-7
1	Line Valve	Robbins	0V600-1P
1	Pressure Reducer	Alar	5758
\$*	3 Portable O ₂ Cylinder As- semblies (310 Liter)	Scott	5600B3-B4-A
\$\$*	3 Portable O ₂ Cylinder As- semblies (310 Liter)	Scott	5500-C1B-BF-23 D
*1	Portable O ₂ Cylinder Assembly (310-Liter)	Scott	5600-21B-K
\$\$*	3 Oxygen Masks (Disposable)	Puritan	114010

*Effective Ships 2 thru 10
**Effective Ships 11 thru 31

CONVAIR: SD

Hughes Tool Company
Change No. 19J

Page 10 of 10

A-18 OXYGEN EQUIPMENT (Cont)

<u>Delete:</u>	1 Check Valve, High Press. Oxygen, Style B	Roylon	AN6015-2
	1 Check Valve, High Press. Oxygen, Style D	Roylon	AN6017-1
	AR Check Valve		
	AR Check Valve Tee		
	1 Line Valve		

A-20 PNEUMATIC EQUIPMENT

1 Selector Valve	Walter Kidde	891507
------------------	--------------	--------

Delete: 1 Air Storage Flasks
(Emergency Door)

A-21 FIRE EXTINGUISHING EQUIPMENT

4 Fire and Overheat Detector Handles	Avionic Prod.	E860-1, E860- E860-5, E860-3
4 Fire Extinguisher Bottle	Walter Kidde	891154
8 Double Check Tees	Walter Kidde	891050

Effect on Weight Empty: 0
Effect on Balance: 0
Effect on Performance: None

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO, CALIFORNIA

File

COMMERCIAL CHANGE PROPOSAL

SPEC NO.: ZD- 22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL _____ DTD _____

CHANGE NO: 19HMODEL: 22-1TITLE: Manufacturer's Name and/or Part NumberORIGIN: Buyer approved specific designation for items of Contractor furnished equipment as noted.REASON FOR CHANGE: To identify equipment items listed in Appendix I-C

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

GUAR. WT. EMPTY

OPER. WT. EMPTY

0

0

0

INCH LB.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* NEGLIGIBLE CHANGES WILL BE ACCUMULATED AND TOTALS REFLECTED IN A FUTURE CHANGE PROPOSAL

ACCEPTANCE OF THIS CHANGE IS DEPENDENT UPON PRIOR ACCEPTANCE OF THE FOLLOWING CHANGES:

ENGINEERING APPROVAL

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

RECURRING: _____

NON-RECURRING: _____

TOTAL: _____

ACCEPTED:

CONVAIR, A DIVISION OF GENERAL DYNAMICS CORP.

BY: _____

DATE: _____

Title: Manufacturer's Name and/or Part Number

Origin: Buyer approved specific designation for items of Contractor furnished equipment as noted.

Reason For Change: To identify equipment items listed in Appendix I-C.

Description of Change:

APPENDIX I-C: Change or add manufacturers' names and/or part numbers to items noted so as to read as follows:

<u>Page No.</u>	<u>Quan. Reqd.</u>	<u>Description</u>	<u>Manufactured</u>	<u>Part or Spec. Number</u>
A-4		<u>Electrical Equipment</u>		
	1	Battery, Storage, Nickel Cadmium 27.5 Volt	Sonotone	CA-121-H
A-5		<u>Electronic Equipment</u>		
	2	Indicators	Kearfott	T8510-11N
A-8		<u>Instruments and Related Equipment</u>		
	1	Indicator, Brake Pneumatic Pressure 2-3/8", 0-1000 lb		
A-9	2	Course Deviation Indicator	Eclipse Pioneer	7233-3A-12-A1
A-10	2	Airspeed-Angle-of-Attack Ind.	Kollsman	B25685-10-009
	1	True Airspeed, Indic. Master	Kollsman	D25737-10-001
A-12		<u>Hydraulic Equipment</u>		
	1	NLG Brake Metering Valve	Weston Hyd.	16650
	2	MLG Brake Metering Valve	Weston Hyd.	16640
		<u>Delete the following:</u>		
	5	Brake Metering Valve		

Page No.	Quan. Reqd.	Description	Manufactured	Part or Spec. Number
A-13		<u>Landing Gear Equipment</u>		
	2	Nose Wheel Tire 29 x 7.7	U.S. Rubber	Type VII 12 PR.
A-14		<u>Furnishings</u>		
		Delete the following item:		
	36	Passenger Seat (Double)		
		Add the following item:		
14		Passenger Seats (Double) Convair L/H (Integral Food Trays)		22-92500-1
2		Passenger Seats (Double) Convair L/H (Integral Food Trays and Plug-in Type Tray Receptacles)		22-92500-7
1		Passenger Seat (Double) Convair L/H (Without Integral Food Tray)		22-92500-5
1		Passenger Seat (Double- Special)L/H		22-92500-3
14		Passenger Seats (Double) Convair R/H (Integral Food Trays)		22-92500-2
2		Passenger Seats (Double) Convair R/H (Integral Food Trays and Plug-in-Type Tray Receptacles)		22-92500-8
1		Passenger Seat (Double) Convair R/H (without integral food tray)		22-92500-6
1		Passenger Seat (Double- Convair Special) R/H		22-92500-4

<u>Page No.</u>	<u>Quan. Reqd.</u>	<u>Description</u>	<u>Manufactured</u>	<u>Part or Spec. Number</u>	
	1	Passenger Seat (Double) R/H (Without Integral Food Tray)	Convair	22-92500-6	
	1	Passenger Seat (Double- Special) R/H	Convair	22-92500-4	
	2	Stewardess' Safety Belt and Shoulder Harness	Associate Suppliers	BN-1-1508	
A-17		<u>Pressurization, Anti-Icing and Air Conditioning</u>			
	2	Primary Heat Exchanger	Ham Standard	545814	
A-18		<u>Oxygen Equipment</u>			
	*3	High Pressure Oxygen Cylinder Assemblies (107 Cu. Ft. Capacity)	Walter Kidde	890942 or ZEP-AERO	
A-21		<u>Fire Extinguishing Equipment</u>			
	*3	Portable Water Bottles	Walter Kidde	890275	

CONVAIR

GENERAL DYNAMICS CORPORATION
CONVAIR AIRCRAFT COMPANY

COMMERCIAL CHANGE PROPOSAL

SPEC NO. ZD- 22-002

DATE: _____

CUSTOMER Hughes Tool Company

MCL _____ DTD _____

CHANGE NO. 191

MODEL: (880) 22-1

TITLE: Manufacturer's Name and/or Part Number

REASON FOR CHANGE: Buyer approved specific designation for items of Contractor Furnished equipment as noted.

REASON FOR CHANGE: To identify equipment items listed in Appendix I-C.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
PLAN. WT. EMPTY	OPER. WT. EMPTY	0 INCH LB.
0	0	

EFFECT ON GUARANTEED PERFORMANCE *	None
------------------------------------	------

INELIGIBLE CHANGES WILL BE ACCUMULATED AND TOTALS REFLECTED IN A FUTURE CHANGE PROPOSAL	
---	--

ACCEPTANCE OF THIS CHANGE IS DEPENDENT UPON PRIOR ACCEPTANCE OF THE FOLLOWING CHANGES:	ENGINEERING APPROVAL
--	----------------------

LAST DATE OF ACCEPTANCE:	AIRPLANES AFFECTED:
--------------------------	---------------------

SPECIAL PROVISIONS:	EFFECT ON PRICE PER AIRPLANE: RECURRING _____ NON-RECURRING _____ TOTAL: _____
---------------------	---

ACCEPTED	CONVAIR, A DIVISION OF GENERAL DYNAMICS CORP.
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DATE:	
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CONVAIR: SD

Hughes Tool Company
Change No. 191

Page 1 of 6

Title: Manufacturer's Name and/or Part Number

Origin: Buyer approved specific designation for items of Contractor furnished equipment as noted.

Reason for Change: To identify equipment items listed in Appendix I-C.

Description of Change:

APPENDIX I-C Change or add manufacturer's names and/or part numbers to items noted so as to read as follows:

Page No.	Quan Reqd	Description	Manufacturer	Part or Spec. Number
A-3		<u>ELECTRICAL EQUIPMENT</u>		
<u>INTERIOR LIGHTS</u>				
1	Light, Tail Position (Was: Tail Light White)	Grimes		B-7890-5
1	Light, Dome Wheel Well (Was: Nose Wheel Well Light)	Grimes		31595-23D 40285A-4615
2	Landing Light, Retractable	Grimes		
1	Auxiliary Landing Light (L.H. Signal Light)	Grimes		40205-1-4559
1	Auxiliary Landing Light (R.H. Signal Light)	Grimes		40205-2-4559
2	Taxi Turn-Off Light	Grimes		30950-4551
<u>Delete:</u>	2	Position Lamp		
	1	Tail Light, Red		
<u>INTERIOR LIGHTS</u>				
AR	Light, Gen. Flood Emerg. Cockpit (Was: Cockpit Light)	Grimes		30750
AR	Light, Fluorescent - In- struments (Was: Cockpit Light)	Luminator		L-15481
6	Light, Aisle (Was: Ceiling and Aisle Light)	Luminator		L-14474
2	Light, Coat Compartment (Was: Coat Compartment Light)	Luminator		L-14487
6	Light, Buffet (Was: Buffet Compartment Light)	Luminator		L-14475

CONVAIR: SD

Hughes Tool Company
Change No. 101

Page 2 of 6

Page No.	Quan Reqd	Description	Manufacturer	Part or Spec. Number
	13	Cargo Dome Light (Was: Belly Cargo Dome Light)	Soderberg	S-1178
	2	Lavatory Compartment Light (Vertical)	Luminator	L-14481
	2	Lavatory Compartment Light (Horizontal)	Luminator	L-14483
	107	Passenger Reading Light (Was: Passenger Reading Light L.H. and R.H.)	Airite Products Inc.	7019-1
	1	Light, Emergency Exit (Was: Service Door Light)	Luminator	L-14476
	1	Light Emergency Exit (Was: Service Door Light)	Luminator	L-14477

<u>Delete:</u>	AR	Accessory Compartment Light
	3	Return to Cabin Signs
	3	Lavatory Occupied-Vacant Signs (Bilingual; English and French)
	4	Fasten Seat Belt-So Smoking Signs (Bilingual; English and French)

A-4 ELECTRICAL EQUIPMENT

AR	Electrical Equipment Racks	Convair	22-61010
1	Warning Horn	Edwards and Co.	318
1	Battery Storage Nickel-Cadmium 27.5 Volt	Sonotone	CA-121

<u>Delete:</u>	AR	Fuel Quantity Power Units
	AR	Fuel Quantity Power Units Mounting Racks
	1	Position Light Flasher
	3	Back-Up Contactors

A-5 ELECTRONIC EQUIPMENT
VHF NAVIGATION SYSTEM

<u>Delete:</u>	2	Flight Path Indicator Integrated System Indicator Machmeter	Eclipse-Pioneer Kollsman	C18135/10-005
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HF COMMUNICATION

1	Antenna (Faired-In Type)	Convair	22-14900
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CONVAIR: SD

Hughes Tool Company
Change No. 191

Page 3 of 6

Page No.	Quan Reqd	Description	Manufacturer	Part or Spec. Number
A-8	<u>INSTRUMENTS AND RELATED EQUIPMENT</u>			
1	Free Air Temp. Bulb (Was: Outside Air Temp. Bulb)	Lewis	54B-1A	
AR	Anti-Icing and Structural Temperature Overheat Indicator (Was: Anti-Icing Air Temp. Ind.)	Fenwal	135517	
1	Rate of Climb Ind. (Was: Cabin Rate of Climb)	Kollsman	DO-7165-10-055	
4	Exhaust Temp. Ind.	Honeywell	Type JG-116A-7	
4	Oil Temp. Ind. (Engine)	Lewis	162C23A	
1	Hydraulic Fluid Quantity Gage (Dual)	Simmonds	293028-10645	
2	Pressure Indicator (Hydraulic)	U. S. Gauge	SR-07A	
1	Indicator, Brake Pneu- matic Pressure 2-3/8", 0-1000 lb	U. S. Gauge	AW1826AD01	
2	Temperature (Temp), Ind. Hydraulic Fluid	Lewis	162C22A	
<u>Delete:</u>	AR	Structural Temp. Over- heat Ind.		
	2	Cabin Compressore Oil Pressure (Press.), Transmitter		
	4	Fuel Flow Transmitter		
	4	Tachometer Generator		
A-9	<u>INSTRUMENTS AND RELATED EQUIPMENT</u>			
1	Ram Air Temperature Indicator	Lewis	161C20B	
2	Course Deviation Indica- tor	Eclipse-Pioneer	7203-3A-14-A3	
2	Horizon Director Indica- tor	Eclipse-Pioneer	17810-2A-A2	
AR	Chassis Flight Command Computer and Amplifier	Kollsman	A33280-00-001	
A-10	<u>INSTRUMENTS AND RELATED EQUIPMENT</u>			
1	Transmitter Angle of Attack	Kollsman	68-40800-0502	
2	Static Selector Valve	Republic Mfg.	5-1357-2	
2	Cabin Temp. Thermometer (Mercury)	Kahl Scient. Ind.	CV-30255	

CONVAIR: SD

Hughes Tool Company
Change No. 191

Page 4 of 6

Page No.	Quan Reqd	Description	Manufacturer	Part or Spec. Number
Delete: 1	Temperature Probe			
A-10 Cont		<u>INSTRUMENTS AND RELATED EQUIPMENT</u>		
	4	Tachometer Indicator	Gen. Electric	8DJ81CAB-Y2
	1	Flap Position Indicator	Gen. Electric	8DJ91BAB-Y2
Delete: 2	Rate of Climb Indicator	Kollsman		DO-7165-10-001
A-11		<u>HYDRAULIC EQUIPMENT</u>		
	2	MLG Sequence Valve	Peacock	51180-3
A-14		<u>FURNISHINGS</u>		
	1	Stewardess Switch Panel	Convair	22-73300
	2	Stewardess Call Chimes (Elec. Switch)	Electro. Switch Control	3001-3
	3	Lavatory Assist Handle	Convair	22-90920
	2	Lavatory Assist Handles	Convair	22-90920-1
	4	Lavatory Assist Handles	Convair	22-90920-3
	3	Lavatory Coat Hook (Flush Type)	Hartwell	H-148-1
	1	Lavatory "Occupied- Vacant" Sign (Bilingual; English and French)	Convair	22-93606 (Fwd)
	2	Lavatory "Occupied- Vacant" Sign (Bilingual; English and French)	Convair	22-94604 (Aft)
	3	"Fasten Seat Belt - No Smoking" Signs	Convair	22-93603 (Cabin)
	1	"Fasten Seat Belt - No Smoking" Sign (Bilingual; English and French)	Convair	22-94606 (Club)
	1	Lavatory Sign "Return to Cabin"	Convair	22-94603 (Aft)
	1	Lavatory Sign "Return to Cabin"	Convair	22-93616 (Fwd)
Delete: 2	Lavatory Sign "No Smoking - Return to Cabin"			

CONVAIR: SD

Hughes Tool Company
Change No. 191

Page 5 of 6

Page No.	Quan Reqd	Description	Manufacturer	Part or Spec. Number
A-14 Cont	<u>FURNISHINGS</u>			
	1	Disposal Tank and Hardware	Convair	22-93802 (Fwd)
	2	Disposal Tanks and Hardware (Lavatory)	Convair	22-94802 (Aft)
	1	Water System Pump	Cornelius	30730100
A-16	<u>FURNISHINGS</u>			
	1	Pitot Head	Aero Research	H7007-3
	1	Pitot Head	Aero Research	H7007-4
	*2	Escape Chute (inflatable)	Garret Corp.	13D12035
	*2	Escape Chute (inflatable)	Garret Corp.	13D12036
A-18	<u>OXYGEN EQUIPMENT</u>			
	2	Regulator and Pressure Reducer (Continuous Flow Type) Automatic Passenger Valve with Manual Override (Was: AR Regulator (Passenger Continuous Flow Type))	Alar	5870-100
	1	Automatic Passenger Valve with Manual Override)		
	3	Smoke Mask	Scott	6849-7
	3	Regulator (Crew Diluter-Demand Type)	Ard Equip.	14950-8
	1	Line Valve	Robbins	OV600-1P
	1	Pressure Reducer	Alar	5758
Delete:	1	Check Valve, High Press. Oxygen, Style B	Roylon	AN6015-2
	1	Check Valve, High Press. Oxygen, Style D	Roylon	AN6017-1
AR		Check Valve		
AR		Check Valve Tee		
	1	Line Valve		

CONVAIR: SD

Hughes Tool Company
Change No. 191

Page 6 of 6

Page No.	Quan Reqd	Description	Manufacturer	Part or Spec. Number
A-21	<u>FIRE EXTINGUISHING EQUIPMENT</u>			
	4	Fire and Overheat De- tector Handles	Avionic Prod.	E860-1, E860-3, E860-5, E860-7

Effect on Weight Empty: 0
Effect on Balance: 0
Effect on Performance: None

TWA- Charge no. 18
(Cancelled)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPC. NO.: CD-22-C02

DATE: 15 April 1957

CUSTOMER: Hughes Tool Company

MCL 10,005 Dtd 20 Feb. 1957

CHANGE NO.: 17

MODEL: (880) 22-1

TITLE: CRAF Provisions; Deletion of:

Reference: TWA Ltrs. 880-2 dated 10-10-56

880-9 dated 10-16-56

880-36 dated 12-14-56

REASON FOR CHANGE: Customer requested deletion of all reference to CRAF Provisions.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty - 35.3	Oper. Wt. Empty - 35.3	- 12793 Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:	AIRPLANES AFFECTED:
----------------------------	---------------------

SPECIAL PROVISIONS:	EFFECT ON PRICE PER AIRPLANE: Recurring: Non-Recurring: Total:
---------------------	---

ACCEPTED:	CONVAIR, A Div. of Gen. Dyn. Corp.
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BY:	
	Chief of Contract Administration Commercial

CONVAIR: SD

15 April 1957
Change No. 17

Title: CRAF Provisions; Deletion of

Origin: Reference: TWA Ltrs. 880- 2, dated 10-10-56
880- 9, dated 10-16-56
880-36, dated 12-14-56

Reason for Change: Customer requested deletion of all reference to
CRAF Provisions.

Description of Change:

Page 78, Paragraph 3.16.10.2 SIGNAL LIGHT (CRAF)
Delete paragraph.

Page 89, Paragraph 3.17.1 EQUIPMENT:

Delete:
Loran (CRAF)
Radar Altimeter System - AVQ-9 (CRAF)
Identification Radar (CRAF)

Page 90, Paragraph 3.17.1.1 CONTROL PANELS:

Delete:
Radar Identification Control (CRAF)

Page 103, Paragraph 3.17.4.3 IDENTIFICATION RADAR (CRAF):
Delete paragraph.

Paragraph 3.17.6 ALTIMETER PROVISIONS (CRAF):
Delete paragraph.

Page 104, Paragraph 3.17.7 LORAN PROVISIONS (CRAF):
Delete paragraph.

Page 112, Paragraph 3.19.2.8.13 CRAF Provisions:
Delete paragraph.

Effect on Weight: -35.3
Effect on Balance: -12793 inch-lb
Effect on Performance: None

GEVATR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC. NO.: 70-22-00 2

DATE: 3 May 1957

CUSTOMER: Hughes Tool Company

MCL _____ Dtd. _____

CHARGE NO: 16

MODEL: (880) 22-1

TITLE: Engine Oil and Constant Speed Drive Oil Tanks; Provisions for Pressure and Emergency Manual Refilling.

CRITICAL: Contractor Initiated.

REASON FOR CHANGE: Pressure filling ensures clean oil in tanks, minimizes oil spillage and removes need of workstand for servicing.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty Negligible	Oper. Wt. Empty Negligible	Negligible Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

ATRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring.

Total:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: Chief of Contract Administration
Commercial

CONVAIR: SD

3 May 1957
Change No. 16

Title: Engine Oil and Constant Speed Drive Oil Tanks; Provisions for Pressure and Emergency Manual Refilling.

Origin: Contractor Initiated

Reason for Change: Pressure filling ensures clean oil in tanks, minimizes oil spillage and removes need of work-stand for servicing.

Description of Change:

Page 47, Paragraph 3.12.8.4 - OIL TANKS:

Revise second sentence to read as follows:

"The tank shall include self-sealing pressure fill and overflow provisions for both engine oil and constant speed drive oil compartments. Emergency manual filler openings, having covers equipped with calibrated dip sticks, shall be provided for the engine oil and constant speed drive oil compartments. Individual doors shall be provided for access to both normal and emergency filling points."

Effect on Weight Empty: Negligible

Effect on Balance: Negligible

Effect on Performance: None

TWA - Change No. 15-B

*Cancelled, Superseded
by CCP No. 98)*

GEORGE C. MARSHALL
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHARGE PROPOSAL

SPEC NO: ZD-22-002

DATE: 17 June 1957

CUSTOMER: Hughes Tool Company

MCL 10,054 MCA 8 May 1957

CHANGE NO: 15A

MODEL: (380) 22-1

TITLE: Revised Description of Radome De-Icing System
(Administrative Type Change)

ORIGIN: Contractor Initiated

REASON FOR CHANGE: No material has been found satisfactory for a radome which will transfer heat at necessary rate for anti-icing and still permit efficient radar operation. Therefore an alternate method of ice protection must be used.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty	None	Inch I.b.
None	None	None	Inch I.b.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE: AIRPLANES AFFECTED:

SPECIAL PROVISIONS: EFFECT ON PRICE PER AIRPLANE:
Recurring: _____
Non-Recurring: _____

Total: _____

ACCEPTED: CONVATR, A Div. of Conv. Inv. Corp.

BY: _____
Chief of Contract Administration

DATE: _____ (MM/PP/CC)

COPIAER: SD

Hughes Tool Company
Change No. 15A
17 June 1957

Title: Revised Description of Radome De-Icing System
(Administrative Type Change)

Origin: Contractor Initiated

Reason for Change: No material has been found satisfactory for a radome which will transfer heat at necessary rate for anti-icing and still permit efficient radar operation. Therefore an alternate method of ice protection must be used.

Description of Change:

Page 124, Paragraph 3.20.2.1 - ANTI-ICING OF NONTRANSPARENT AREAS:

In second line, delete the words "the radome and".

At end of paragraph, add the following new sentence:

"Adequate de-icing means shall be incorporated for de-icing of the radome."

Effect on Weight Empty: None
Effect on Balance: None
Effect on Performance: None

TWA - Change No. 15
(Rejected)

TWA- Change No. 14
(Cancelled)

TWA- Change No. 12 And 13

No CCP requires Changes are
Covered in CCP Summary No. 8

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPC NO: ZD-22-002

DATE: 1 May 1957

CUSTOMER: Hughes Tool Company

MCL 10,042 Dtd 19 April 1957

CHANGE NO: 11

MODEL: (880) 22-1

ITEM: Oil Temperature Gages, Change From Dual to Single Instruments

ORIGIN: Contractor Initiated

REASON FOR CHANGE: To comply with instrument arrangement and description as presented and agreed to in Mock-Up Minutes. Ref. Mock-Up Minutes, dated 25, 26 February 1957 and 30 April 1957

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty + 1.0 lb	Oper. Wt. Empty + 1.0 lb	Negligible Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: SD

1 May 1957
Change No. 11

Title: Oil Temperature Gages, Change From Dual To Single Instruments

Origin: Contractor Initiated

Reason for Change: To comply with instrument arrangement and description as presented and agreed to in Mock-Up Minutes. Ref. Mock-Up Minutes, dated 25, 26 February 1957 and 30 April 1957.

Description of Change:

Page 57, Paragraph 3.14.1.4 - FLIGHT ENGINEER'S INSTRUMENTS

Change: 4 Oil Temperature Gages (2 dual)

To: 4 Oil Temperature Gages

Page A-8, Appendix I-C - INSTRUMENTS AND RELATED EQUIPMENT

Change: 2 Dual Oil Temperature Indicators (Engine)

To: 4 Oil Temperature Indicators (Engine)

Effect on Weight: +1.0 lb
Effect on Balance: Negligible
Effect on Performance: None

Convair
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPFC NO: ZD-22-002

DATE: 20 February 1957

CUSTOMER: TWA

MCL 10,007 Dtd

CHANGE NO: 10

MODEL: (880) 22-1

TITLE: Pitot Static Tubing Size - Change to 3/8" Dia. Section

ORIGIN: Customer Requested - Ltr. No. 880-4 dtd 10 October 1956
Convair Ltr. 6-4286 dtd 16 October 1956

REASON FOR CHANGE:

Customer requested 3/8" pitot static tubing to prevent retention
of moisture by capillary action.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	
Negligible	Negligible	Negligible Inch I.b.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

C NO ZD-22-002E OPPOSITE PAGE NO 61DATE 17 December 1956ANGE (FCP) NO 10MODEL 880

REVISED

TRACT TWATHORITY AND REASON FOR CHANGE: Contractor initiated, per request of customer.
Ltr. #080-4, dated 10 October 1956. Reply - Convair Ltr. #6-4286, dated
October 1956

CHANGE

aragraph

1.14.3.6

At end of sentence "nor less than 1/4" on
pitot side".Add"except that pitot lines shall be 3/8 inch
for a minimum of 3 feet inboard of the pitot
tube connector fitting."

Effect Weight Empty:	Negligible
Effect on Balance:	Negligible
Effect on Performance:	Negligible

PLATES AFFECTED:

BY A. M. J. Gosselle
APPROVED BY O. J. Alvarez

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPFC NO: 20-22-002

DATE: 28 February 1957

CUSTOMER: TWA

MCL _____ Dtd _____

CHANGE NO: 9

MODEL: (880) 22-1

TITLE: Deletion of Tape Reproducer Call-Out in Equipment List

ORIGIN: Customer Request

REASON FOR CHANGE:

To define original intent by deleting this item from equipment list. Reference: Call-out for tape reproducer to be reinstated by a future change.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	None Inch Lb.
None	None	

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

BY:

Mr. E.S.:

BY:

Chief of Contract Administration
Commercial

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
SAN DIEGO, CALIFORNIA

SPECIFICATION CHANGE NOTICE

NO. ZD-22-002

OPPOSITE PAGE NO. A-6

DATE 17 December 1956

NGE (ECP) NO. 9

MODEL 880

REVISED

TRACT TWA

MOTIVITY AND REASON FOR CHANGE: Administrative type change, corrections and revisions to clarify intent of specification.

CHANGE

PENDIX I-C - ELECTRONIC EQUIPMENT

P.A. SYSTEM:

Delete:

1 Tape Reproducer Arinc Spec.

PLANES AFFECTED:

BY J. M. Pard
APPROVED BY O. J. Parand

CONVAIR
Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPCC NO: ZD-22-002

DATE: 28 February 1957

CUSTOMER: TWA

MCL _____ Otd _____

CHANGE NO: 8

MODEL: (880) 22-1

TITLE: Air Conditioning Controls, Location of

ORIGIN: Customer Request (Verbal)

REASON FOR CHANGE:

Air conditioning controls are located on the flight deck and cannot be controlled from two points.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *
Guar. Wt. Empty	Oper. Wt. Empty	
None	None	None Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: Chief of Contract Administration
Commercial

DATE: _____

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

NO. ZD-22-002

OPPOSITE PAGE NO. 108

DATE 17 December 1956

AGE (ECP) NO. 8 MODEL 880

REVISED

TRACT TWA

CHANGE

graph

9.2.1.3 Delete "Cabin Heating and Ventilating".

PLANES AFFECTED: All

BY John S. Davis
APPROVED BY John S. Davis

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

NO. ZD-22-002

OPPOSITE PAGE NO. 123

DATE 17 December 1956

NGE (ECP) NO. 8 MODEL 880

REVISED

TRACT TWA

CHANGE

Paragraph

.20.1.12 Revise 3rd sentence to read:

"A ground connection shall be installed in or near the nose wheel well to permit ground pressure testing of the high pressure duct system and operation of the cabin air compressors and pneumatic starting of the aircraft engines from a suitable ground source."

After 2nd sentence, add sentence:

"The Freon system shall be capable of being operated on the ground from a suitable external electrical source through the aircraft's normal electrical ground connection."

PLANES AFFECTED:

BY John J. Bessant
APPROVED BY John J. Bessant

TWA- Charge no. 7
(Cancelled)

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

28 February 1957

Revised DATE: 5 April 1957

SPEC. NO.: 2D-22-002

CUSTOMER: Trans-World Air Lines

MCL _____ dtd _____

CHANGE NO.: 6 Revised

MODEL: (880) 22- 1

TYPE: Operating Temperature Requirements and Inclusion of
ANA Bulletin No. 421 Requirements

ORIGIN: Contractor Initiated - Reference: TWA Ltr. 880-101A-6
dtd 21 March 1957

REASON FOR CHANGE: Revised per Customer request to more accurately define standard hot and cold atmospheric properties.

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty

Oper. Wt. Empty

None

None

None Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY:

Chief of Contract Administration
Commercial

DATE:

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

C NO. ZD-22-002E OPPOSITE PAGE NO. 18DATE 17 December 1956ANGE (ECP) NO. 6MODEL 880

REVISED

NTRACT TWA

THORITY AND REASON FOR CHANGE: Contractor initiated - to clarify intent of original paragraph.

CHANGEParagraph3.2.5 Change to read:

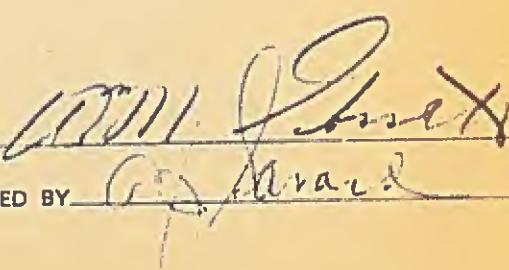
OPERATING TEMPERATURE: The airplane and its equipment shall operate satisfactorily after being soaked at temperatures from -40°F to + 120°F and when flown in ambient temperatures in accordance with the extreme hot and cold atmospheres cited in ANA Bulletin No. 421 for the maximum endurance possible at these temperatures.

IRPLANES AFFECTED:

DRM 618C

BY

APPROVED BY



CONVAIR
Division of General Dynamics Corporation
San Diego, California

CONCEPTUAL CHANGE PROPOSAL

SPC/N: 2D-22-002

DATE: 28 February 1957

CUSTOMER: TWA

MCL 10,002 dtd

CHANGE NO: 5

MODEL: (880) 22- 1

TITLE: Definition of Use of "ERMETO" and "WIG-O-FLEX" Fittings

ORIGIN: Contractor Initiated. Reference: Convair Ltr. 6-6660 dtd 9 Oct. 56
TWA Ltr. G.F. Moore to B.J. Simons
dtd 26 Sept 1956
TWA Ltr 880-30 dtd 3 Dec 1956

REASON FOR CHANGE:

To reduce weight and accommodate requirements of wing flexing
and allow length and alignment tolerances.

EFFECT ON WEIGHT *

EFFECT ON BALANCE *

Guar. Wt. Empty

Oper. Wt. Empty

-102.0 lb

-102.0 lb

Negligible

Inch lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

Chief of Contract Administration
Commercial

AMOUNT: _____

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

NO. ZD-22-002

OPPOSITE PAGE NO. 50

NGE (ECP) NO. 5 MODEL 880

TRACT TWA

DATE 17 December 1956

REVISED

HORITY AND REASON FOR CHANGE: Design improvement change to reduce weight, accommodate wing flexure, and length and alignment tolerances.

CHANGE

paragraph

.12.9.6 Change sentence regarding Ermeto type fittings to read:

"Fittings shall be of the Ermeto type except for sizes 1.00" and larger located inside the fuel tanks which shall be of the Wiggins Wig-O-Flex type.

Effect on:

Weight = -102 pounds

Balance = Negligible

Performance = Effects of this change shall be compiled with others and reported at a later date.

ANES AFFECTED:

618C

BY W.M. Sneed

APPROVED BY W.F. Barnes

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGE PROPOSAL

SPEC NO: ZD-22-002

DATE: _____

CUSTOMER: Hughes Tool Company

MCL 10.147 Dtd 10 October 1957

CHANGE NO: 4

MODEL: (880) 22-1

TITLE: Airplane Configuration, Detailed Revision to

ORIGIN: Contractor initiated

REASON FOR CHANGE: To incorporate the latest external configuration
of the airplane into the specification.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty	Oper. Wt. Empty		
0	0	0	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *

None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring: _____

Non-Recurring: _____

Total: _____

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____

BY: _____
Chief of Contract Administration
Commercial

DATE: _____

CONVAIR: S. D.

Hughes Tool Company
Change No. 4

Page 1 of 4

Title: Airplane Configuration, Detailed Revision to

Origin: Contractor initiated

Reason for Change: To incorporate the latest external configuration of the airplane into the specification.

Description of Change:

Page 15, replace all data on the page with the following:

"3.1 CHARACTERISTICS (Cont)

3.1.3 DIMENSIONS AND DATA:

3.1.3.1 WING:

Airfoil Section Designation

NACA 0011-64 Mod

Root (Extended Chord)

NACA 0009.08-64 Mod

31.51% semi-span (break)

NACA 0008-64 Mod

Tip

Incidence:

Root

2.0°

Span (Aerodynamic)

117' 11.9"

Span (Overall)

120' 0"

Area - Total (basic trapezoid)

2000 sq. ft.

Root Chord (basic)

27' 0.7"

(extended)

35' 8.4"

Tip Chord

6' 9.0"

Dihedral (MCP)

7.0°

Aspect Ratio (basic trapezoid)

7

Sweep (30% Chord)

35.0°

Mean Aerodynamic Chord

18' 11.3"

(basic true)

Flaps - Type

Double Slotted

CONVAIR, S. D.

Hughes Tool Company
Change No. 4

Page 2 of 4

3.1.3.2	TAIL:	
3.1.3.2.1	HORIZONTAL:	
	Area	395 sq. ft.
	Dihedral	7°30'
	Sweep (30% chord)	35.0°
3.1.3.2.2	VERTICAL:	
	Area	295 sq. ft.
	Sweep (30% chord)	35.0°
3.1.3.3	BODY:	
	Maximum width	11'6"
	Maximum Height	12'5"
	Length	124'2"
	Height - overall	36'0.3"
	Maximum Cabin Interior (width) at constant section	10'8"
	Cargo Compartment Capacities:	
{3.1-D2}	Forward	448 cu ft
{3.1-D4}	Aft	402 cu ft

Page 36, Paragraph 3.8.4.7 STEERING CONTROL:

In fourth line, change the following:

From: 17 feet 7 inches

To: 19 feet 5 inches

In seventh and eighth lines, change the following:

From: 81 feet 7 inches

To: 82 feet 10 inches

Pages 38 through 41, Paragraph 3.10, SURFACE CONTROL SYSTEM:

Revise the following subparagraphs to read as follows:

"3.10.1.2 AILERON SYSTEM: Ailerons and spoilers shall be used for lateral control. The ailerons shall be manually controlled by a separate cable system from each wheel and a separate cable system in each wing connecting to the aileron flight tab. The ailerons shall be interconnected by push pull tubes. The spoilers shall be hydraulically operated and shall be used at all speeds for lateral control as well as speed brakes. The spoiler system shall have two independent hydraulic power systems. Lateral trim shall be accomplished by an irreversible trim tab located on each aileron and operated by a control wheel in the flight deck.

3.10.1.3 RUDDER SYSTEM: The rudder shall be manually controlled by sets of rudder pedals provided for the

pilot and copilot. A cable and push pull tube system shall interconnect the rudder and a spring tab on the rudder. Each set of rudder pedals shall be adjustable fore and aft, to accommodate pilots of different stature. Trim control shall be accomplished by an irreversible trim tab operated by a control wheel on the pedestal.

3.10.1.4

ELEVATOR SYSTEM: The elevator shall be manually controlled by wheel type control columns for the pilot and copilot. A cable push pull tube system shall interconnect the control columns and operate spring tabs on each elevator.

3.10.1.4.1

GUST LOCKS: Change title to "GUST PROTECTION" and

Revise paragraph as follows:

Hydraulic dampers shall be installed at each aileron, elevator and the rudder surfaces to prevent structural damage due to gusts. The dampers shall not adversely affect normal control forces in flight.

3.10.1.5

STABILIZER SYSTEM: The stabilizer shall be controllable to provide longitudinal trim. Movement shall be accomplished by hydraulic power (with a standby mechanical system). A red warning light will indicate an incorrect stabilizer setting for takeoff whenever the airplane is on the ground.

3.10.2.1

LIFT AND DRAG INCREASING DEVICE SYSTEMS:

"The flaps shall be operated by a hydraulic motor driven gear box, located in the fuselage, powered by both hydraulic systems. Torque tubes shall connect the gear box to mechanical actuators at each flap section. The system shall be irreversible to prevent flap motion from air-loads. The flaps shall be controlled by a lever on the pilots' pedestal. Flap position indication shall be provided. Full flap deflection shall be obtainable from either hydraulic system. A monitoring system shall be provided to prevent asymmetrical flap positioning in the event of mechanical failure.

at every low air speed

CONVAIR, S. D.

Hughes Tool Company
Change No. 4

Page 4 of 4

3.10.5 YAW DAMPER: A yaw damper shall be provided to improve riding qualities and handling characteristics of the basic airplane. The airplane shall be basically stable (nondivergent) under all normal flight conditions with the yaw damper inoperative. The yaw damper shall be designed so that it will fail safe and shall not induce unsafe loads in the event of malfunctioning.

Page 2A, Figure 1-1, GENERAL ARRANGEMENT, MODEL 22 JET TRANSPORT

Delete present figure from Specification and substitute Enclosure (A)

Page 2B, Figure 1-2, INBOARD PROFILE AND PLAN VIEW

Change figure to show revised forward and aft cargo compartment capacities and revise compartment shape.

Figure 1, Appendix II, ALTERNATE SEATING ARRANGEMENT

Change figure to show revised shape of cargo compartment spaces, in accordance with Enclosure (B)

Figure 3.1-2 C.G. DESIGN LIMITS

Replace present figure in Specification with Enclosure (C)

Enclosure: (A) Four (4) copies Figure 1-1, GENERAL ARRANGEMENT OF MODEL 22 JET TRANSPORT

Enclosure: (B) Four (4) copies of sketch showing cross section of revised cargo compartment shape

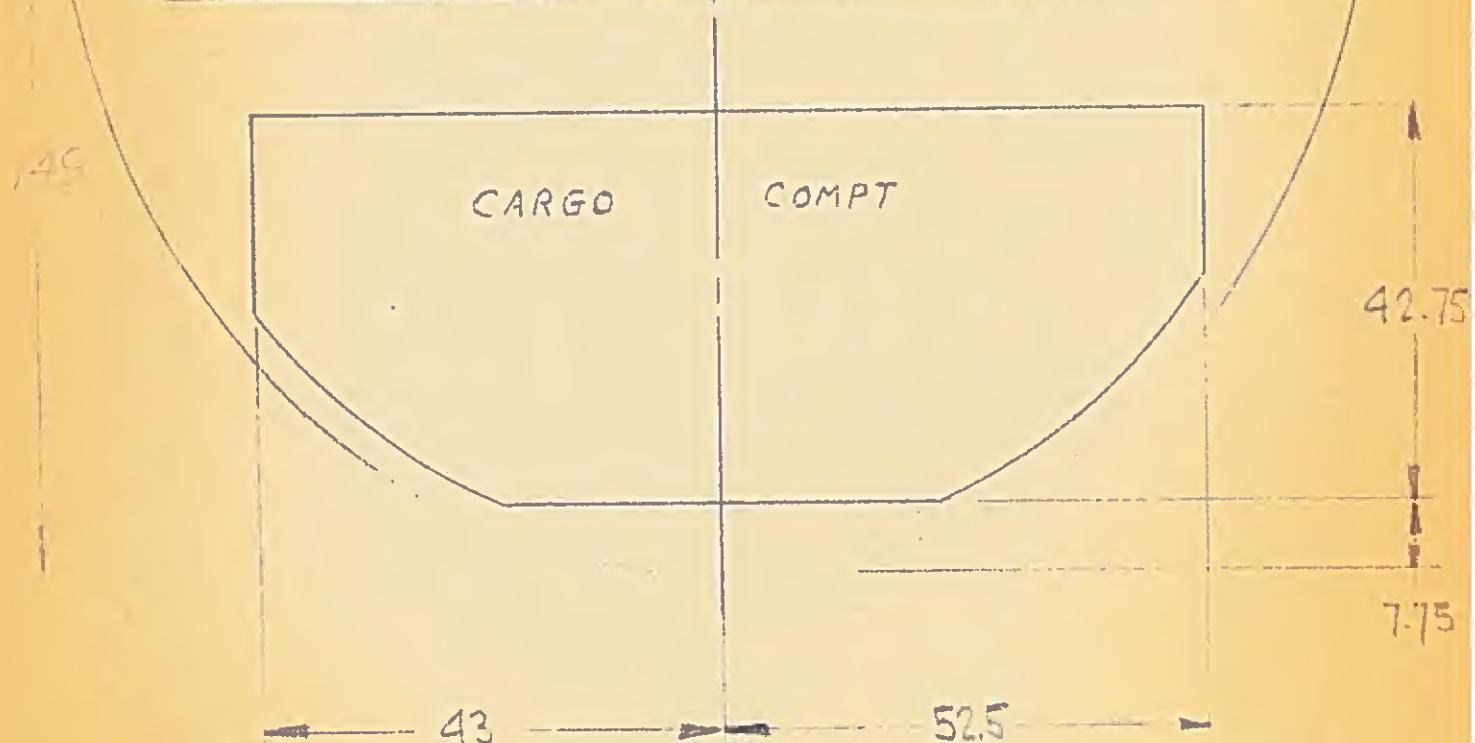
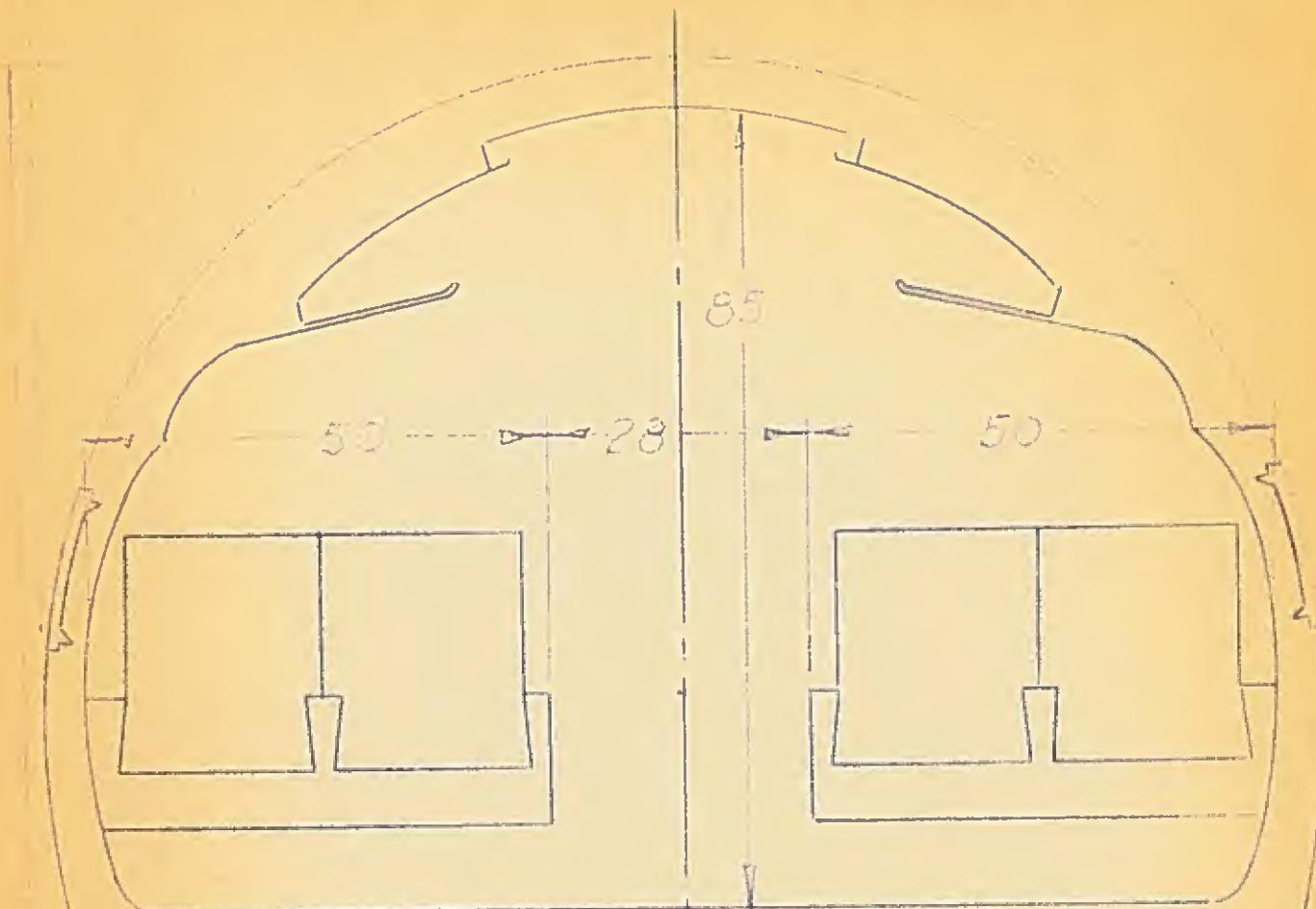
Enclosure: (C) Four (4) copies Figure 3.1-2, C.G. DESIGN LIMITS

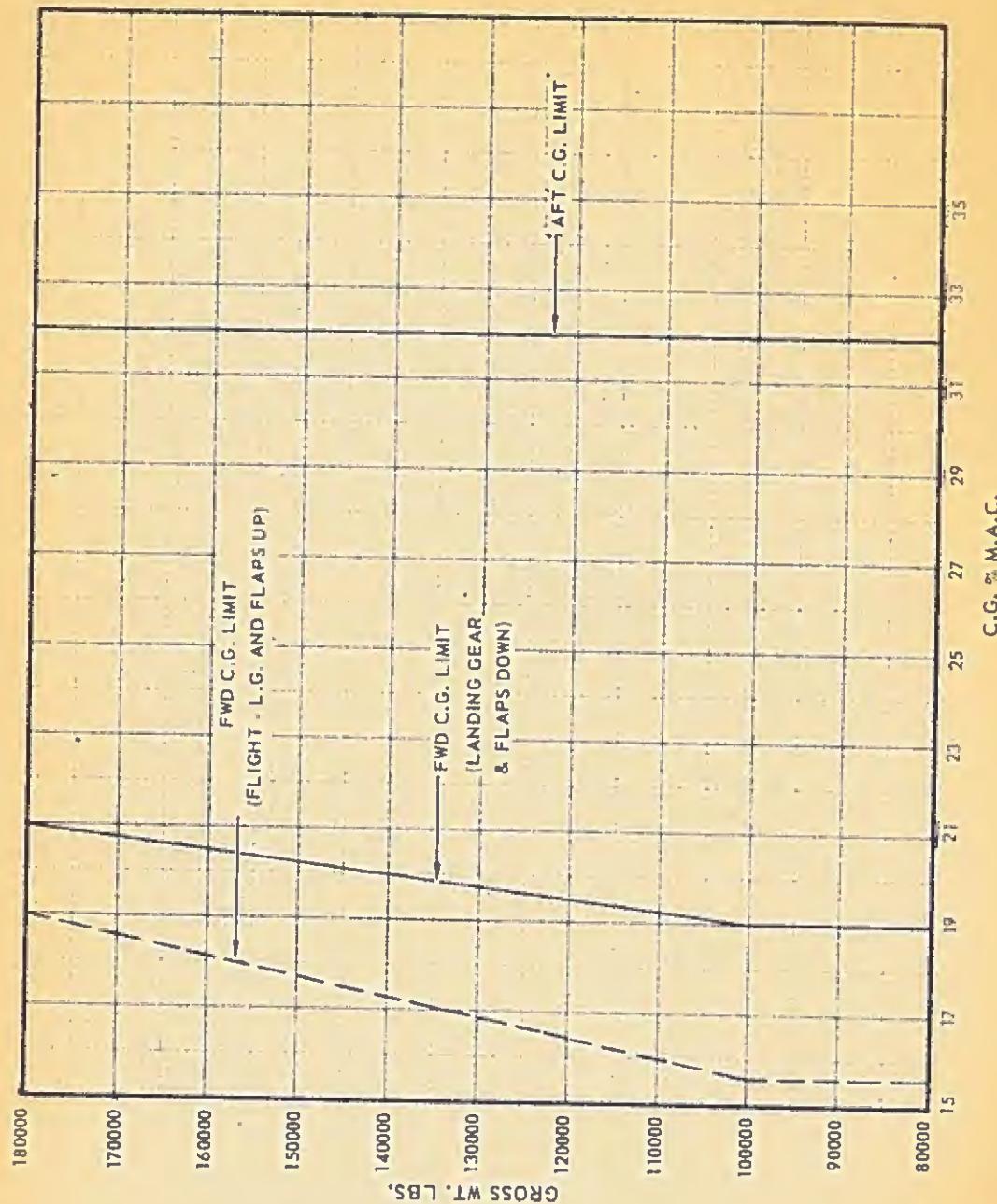
Effect on Weight Empty: 0

Effect on Balance: 0

Effect on Performance: None

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C. G. Design Limits

FIGURE 3.1-2

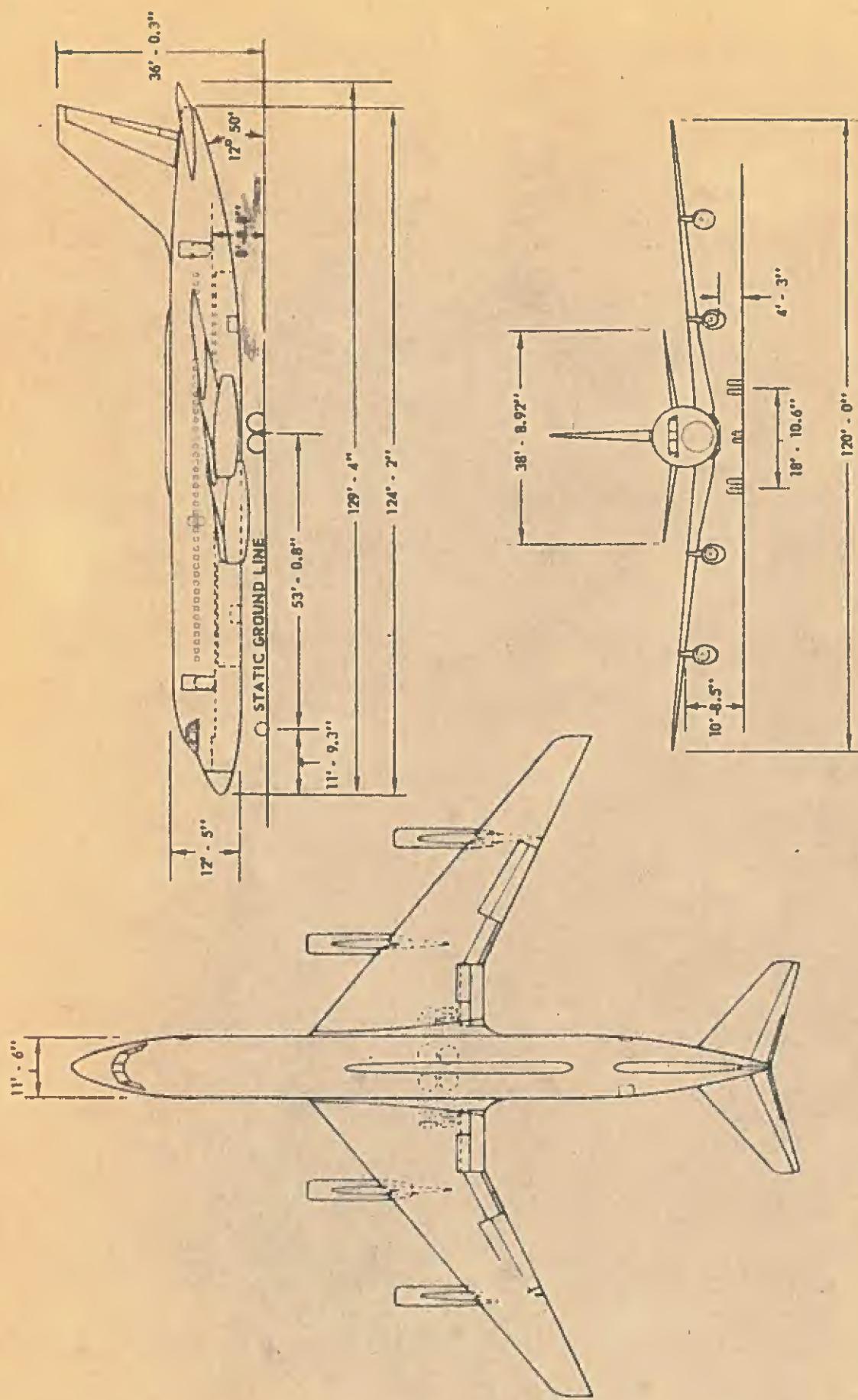


FIGURE 1-1
GENERAL ARRANGEMENT
MODEL 22 JET TRANSPORT

CONVAIR: SD

Hughes Tool Company
Change No. 3A

Page 1 of 2

Title: Hydraulic System, Changes to

Origin: Letter of Agreement No. 26 of Purchase Agreement and TWA Letter Nos. 880-99 dated 12 March 1957, 880-323 dated 20 September 1957 and 880-363 dated 25 October 1957.

Reason for Change: To change requirements of four hydraulic reservoirs to two reservoirs and to provide individual fluid quantity indication for each hydraulic system; and revision to CCP No. 3.

Description of Change:

Page 57, Paragraph 3.14.1.4 FLIGHT ENGINEER'S INSTRUMENTS:

Add the following item to the instrument list:

"One remote quantity gage, hydraulic reservoir (dual)"

Page 63, Paragraph 3.15.1.7 RESERVOIRS:

Delete the paragraph and substitute the following:

"Two hydraulic reservoirs, interconnected at approximately the refill level, shall be installed aft of the main wheel well area to supply the systems. The interconnection of the reservoirs provides for common filling and common level indication. The installation of the reservoir shall be such that the tanks may be filled by maintenance personnel at ground working level. A dual, remote reading quantity gage shall be installed on the flight engineer's panel to indicate the fluid level of each reservoir system. Each hydraulic system reservoir shall be provided with a transmitter, and a two-channel amplifier installed in the electrical compartment, to actuate the dual quantity gage. One sight gage shall be installed in the system No. 1 reservoir and shall be accessible for daily preflight checks, and for routine maintenance use."

Page A8, APPENDIX I-C, INSTRUMENTS AND RELATED EQUIPMENT:

Change the 17th item in Description List as follows:

From: "A.1 Hydraulic Fluid Quantity"

To: "1 Hydraulic Fluid Quantity Gage (Dual)"

Change the 28th item in Description List as follows:

From: "4 Hydraulic Fluid Quantity Transmitter"

To: "2 Hydraulic Fluid Quantity Transmitter"

CONTRACT: 6D

Hughes Tool Company
Change No. 3A

Page 2 of 2

Page All, APPENDIX I-C, HYDRAULIC EQUIPMENT:

Change 5th item in Description List as follows:

From: "4 Main Reservoirs"

To: "2 Main Reservoirs"

Figure 3.8-1 HYD. LANDING GEAR WITH ACCUMULATORS

Figure 3.15-1 HYD. SYSTEM

Revise above figures as required to reflect above changes.

Effect on Weight Empty: +22.0 pounds
Effect on Balance: +19,800 inch-pounds
Effect on Performance: None

CONVAIR
A Division of General Dynamics Corporation
San Diego, California

COMMERCIAL CHANGES PROPOSAL

*Rejected by
TWA letter 880-363
10-25-57*

SPRC ID: 70-22-002

DATE: 7 May 1957

CUSTOMER: Hughes Tool Company

MCL 0 Dtd 0

CHANGE NO: 3

MODEL: (880) 22-1

ITEM: Hydraulic Reservoirs

Letter of Agreement No. 26 of Purchase Agreement dated 20
ORIGIN: September 1956, and TWA Letter 880-99 dated 12 March 1957

REASON FOR CHANGE: To change requirement of four hydraulic reservoirs
to two reservoirs.

EFFECT ON WEIGHT *		EFFECT ON BALANCE *	
Guar. Wt. Empty + 22.0 lb	Oper. Wt. Empty + 22.0 lb	+ 19,800	Inch Lb.

EFFECT ON GUARANTEED PERFORMANCE: *
None

* Negligible Changes Will be Accumulated and
Totals Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Prior Acceptance of the Following Changes:

Engineering Approval

LATEST DATE OF ACCEPTANCE:

AIRPLANES AFFECTED:

SPECIAL PROVISIONS:

EFFECT ON PRICE PER AIRPLANE:

Recurring:

Non-Recurring:

Total:

ACCEPTED:

CONVAIR, A Div. of Gen. Dyn. Corp.

BY: _____
Title: _____
Date: _____

Chief of Contract Administration
Commercial

CONVAIR: SD

7 May 1957
Change No. 3

Title: Hydraulic Reservoirs

Origin: Letter of Agreement No. 26 of Purchase Agreement, dated 20 September 1956, and TWA Letter 880-99 dated 12 March 1957

Reason for Change: To change requirement of four reservoirs to two reservoirs.

Description of Change:

Page 63, Paragraph 3.15.1.7 - RESERVOIRS:

Delete paragraph and substitute following:

"Two hydraulic reservoirs, interconnected at approximately the refill level, shall be installed aft of the main wheel well area to supply the systems. The interconnection of the reservoirs provides for common filling and common level indication. The installation of the reservoirs shall be such that the tanks may be filled by maintenance personnel at ground working level. One fluid level indicator shall be provided on the flight engineer's panel. The transmitter for this indicator shall be installed in system No. 2 reservoir and shall indicate the common level of both systems above the interconnection as well as system No. 2 level below the refill point. One sight gage shall be installed in the system No. 1 reservoir and shall be accessible for daily preflight checks, and for routine maintenance use."

Figures 3.8-1 and 3.15-1

To be revised to reflect subject change.

Page A-11, APPENDIX I-C - HYDRAULIC EQUIPMENT:

Fifth item, Main Reservoirs; Change Quantity Required from 4 to 2.

Page A-8, APPENDIX I-C - INSTRUMENTS AND RELATED EQUIPMENT:

Seventeenth item, Hydraulic Fluid Quantity Indicator; Change Quantity Required from AR to 1.

Twenty-eighth item, Hydraulic Fluid Quantity Transmitter; Change Quantity Required from 4 to 1.

Effect on Weight Empty: +22.0 lb
Effect on Balance: +19,800 inch-lb
Effect on Performance: None

AMERICAN AIRLINES, INC.
Dallas, Texas

OPTIONAL FORM NO. 1050

Change No. 2

Revised: 1 May 1957
Date: 17 December 1956

Contractor: Hughes Tool Company

Model: 1

Change No.: 2 Revised

Model: (80) 1

Subject: Constant Section Fuselage Window Interchangeability

Originator: Contractor Initiated

Reason for Change: To attain sound level requirements within minimum weight.

EFFECT ON WEIGHT			EFFECT ON PRICE	
Unit Wt. Empty	Oper. Wt. Empty			
None	None			None

Effect on Guaranteed Performance: *

None

Accumulative Changes Will be Accumulated and
Finally Reflected in a Future Change Proposal

Acceptance of this Change is Dependent Upon
Final Acceptance of the Following Changes:

Date of Acceptance:

Acceptance of Change

Final Provisions:

EFFECT ON PRICE PER AIRPLANE:
Occurring:
Non-Refundable
Refundable

Date Fwd:

AMERICAN AIRLINES, A Div. of Pan American

By:

Chief of Contracts
Commercial

CONVAIR: SD

Revised: 1 May 1957
Date: 17 December 1956
Change No. 2 Revised

Title: Constant Section Fuselage Window Interchangeability

Origin: Contractor Initiated.

Reason for Change: To attain sound level requirements within minimum weight.

Description of Change:

Page 28, Paragraph 3.7.1.4 - WINDOWS

Delete fifth sentence and substitute following:

Outer windows shall be interchangeable in any window position within the fuselage constant section. The fuselage constant section shall be divided into not more than three zones fore and aft. Inner windows shall be interchangeable in any window position within the same zone. As many common parts as practicable shall be used in all zones.

Effect on Weight Empty: None
Effect on Balance: None
Effect on Performance: None

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

C NO. ZD-22-002E OPPOSITE PAGE NO. 20ANGE (FCP) NO. 1TRACT TWADATE 20 November 1956REVISED 11 January 1957

THORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

3.4.1 Change wording in tabulation to read:

APP 1.5g (except turfet structure which shall be 9.0g)

3.4.4 2nd paragraph, 2nd line -

Add the word "aft" before "galley"Delete the 3rd sentence beginning with
"galley support".

3.4.5 2nd paragraph, 6th line -

Before the 3rd word of the sentence insert
the following:"Bonded sandwich applications shall be con-
fined to the build-up of panels which are
individually replaceable by riveted or
bolted type attachments". Continue with
next sentence: "Other than in the".

RPLANES AFFECTED:

ORM 618C

BY W. M. GossellAPPROVED BY C. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

DATE 20 November 1956

RE OPPOSITE PAGE NO. 2

REVISED _____

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Page 2

"INTRODUCTION"

3rd paragraph, 2nd sentence

correct word Brough

to read Brought

IRPLANES AFFECTED:

BY W.M. Smith
APPROVED BY A. C. Inney

DRM 618C

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

LE OPPOSITE PAGE NO. 7

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

1.3

1st sentence -

Change words "Customer Vended"

to read "Buyer Vended"

2nd sentence -

Change reference "I-C" to

read "I-B" and words "Customer Vended"

to read "Buyer Vended"

PLANES AFFECTED:

ARM 618C

BY W.M. Smith
APPROVED BY A.C. Truax

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

LE OPPOSITE PAGE NO. 8

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED _____

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

1.4.1.1 7th line

Add after word "interchangeability"
the words "or replaceability".

PLANE AFFECTED:

BY W.M. Sosette
APPROVED BY A.C. Inley

DRM 618C

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

LE OPPOSITE PAGE NO. 16

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.2.2.1 Add paragraph title -

"Color Coding:"

3.2.2.2 Add paragraph title -

"Plumbing Installation:"

PLANE AFFECTED:

BY W.M. Sosette
APPROVED BY A.C. Truey

CRM 618C

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

LE OPPOSITE PAGE NO. 21

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.5.2.1 4th line -

Delete hyphen between words

"web" and "type".

IRPLANES AFFECTED:

BY W.M. Smith

APPROVED BY A. C. Inney

CRM 618C

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

DATE 20 November 1956

LE OPPOSITE PAGE NO. 28

REVISED _____

RANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.7.1.3.2

12th line -

Delete words "or sun filters"

14th line -

Beginning with first word of sentence,
delete entire sentence.

IRPLANES AFFECTED:

BY W. M. Smith

APPROVED BY A. C. Truey

DRM 618C

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

NO. ZD-22-002

OPPOSITE PAGE NO. 32

CHANGE (ECP) NO. 1

TRACT TWA

DATE 20 November 1956

REVISED 11 January 1957

MOTIVITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.8.1 9th line -

Change Figure notation "8-1"

to read "3.14-1".

AIRPLANES AFFECTED:

BY W.M. Garrett
APPROVED BY A. C. Insey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

LE OPPOSITE PAGE NO. 35

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED _____

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.8.4.2

10th line -

Change word "war"
to read "wear"

PLANE AFFECTED:

DRM 618C

BY W. B. Smith
APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

RE OPPOSITE PAGE NO. 38

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.10.1.2 9th line -

Change "EAS or M = 0.60"

to read "EAS and M = 0.60"

PLANES AFFECTED:

BY W. M. Brooks

APPROVED BY A. C. Innes

DRM 618C

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 39

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

DATE 20 November 1956

REVISED

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.10.1.3

6th line -

Delete entire sentence starting
with "The"

AIRPLANES AFFECTED:

BY A. M. Sossitt

APPROVED BY A. C. Incey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 42

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

DATE 20 November 1956

REVISED _____

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.11.5 1st line -

Replace the word "strut"
with "pylon"

AIRPLANES AFFECTED:

BY W. M. Brooks
APPROVED BY C. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 43

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.11.7 9th line -

Add a comma following
the word "assembly".

AIRPLANES AFFECTED:

BY Wm. Goss

APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 45

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

DATE 20 November 1956

REVISED

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.12.4.2.1

2nd line -

Insert the following after the word "engine" - "driving a constant speed drive,"

3rd line -

Add a period after the word "drive" and delete remainder of sentence.

AIRPLANES AFFECTED:

BY

APPROVED BY

W. M. Jacobs
A. C. Truett

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 46

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

DATE 20 November 1956

REVISED

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.12.4.4

Delete paragraph.

Paragraph is to be combined

with paragraph 3.12.12, page 55

AIRPLANES AFFECTED:

BY W.M. Smith

APPROVED BY A.C. Tracy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 47

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

DATE 20 November 1956

REVISED

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.12.8.3

9th line -

Beginning with sentence starting
on this line make a new paragraph

3.12.8.4 entitled "TANKS:"

3.12.9.1

2nd line -

Omit comma after last word of
this line.

6th line -

Add comma after word "fuel" -

Add word "kerosene" after word
"gasoline".

AIRPLANES AFFECTED:

BY Conn. Bassett

APPROVED BY A. C. Iruey

COH V A I R

A DIVISION OF GENERAL ELECTRIC CORPORATION
(SAN DIEGO)

Page 1 of 2

SPECIFICATION CHANGE NOTICE

C NO. ZD-22-002

FILE OPPOSITE PAGE NO. 48

DATE 20 November 1956

CHANGE (ECP) NO. 1

MODEL 1440

REVISED 11 January 1957

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.12.9.1.1 Delete last two sentences from this paragraph.

3.12.9.2 Delete parentheses from this paragraph number.

9th line -

Change word "braker" to read "breaker".

12th line -

Change sentence beginning on this line to read as follows:

"Each pump and its control relay shall receive power from the same source."

(continued on page 2 of 2)

BY

APPROVED BY

AIRPLANES AFFECTED:

ANALYSIS
PREPARED BY
CHECKED BY
REVISED BY

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

PAGE A-14 Cont
REPORT NO. ZD-22-002
MODEL 22
DATE 6-1-56

Rev. 8-20-59

APPENDIX I-C
FURNISHINGS
CONVAIR FURNISHED - CONVAIR INSTALLED

Quan Reqd	Description	Manufacturer	Part or Spec. Number
/19E	3 Ash Tray (Lavatory)	Convair	22-95400
/19F		(Partition Assy Aft)	
/173		Convair	22-94851
/249		(Post Assy Door Fwd	
/244		Lav. Aft)	
/258	1 Water System Pump	Convair	22-93803 (Fwd)
	AR Buffet Water Filters	Convair	22-94803 (Aft)
	3 Cleansing Tissue Dispenser	Convair	
	3 Towel Dispenser Units (each consisting of three dis- pensers; two universal for either linen or paper, and one for paper only)	Convair	22-93803 (Fwd)
		Convair	22-94803 (Aft)
	3 Sanitary Napkin Dispenser	Convair	22-93805 (Fwd)
		Convair	22-94805 (Aft)
4	Emergency Lights	Luminator	L-14477
2	Emergency Lights	Luminator	L-14476
1	Toilet Shroud	Convair	22-93801 (Fwd. Lav.)
1	Toilet Shroud	Convair	22-94801 (Aft Lav.)
*1	First Aid Kit		44-0336
2	Food Warming Ovens (42-meal cap.)	Nordskog	5146
1	Food Warming Oven (21-meal cap.)	Nordskog	5151
*5	Waste Containers (Buffet) (Physically interchangeable with Nordskog Waste Container No. 6076)	Convair	22-92782

*Fixed Useful Load

ANALYSIS
PREPARED BY
CHECKED BY
REVISED BY

CONVAIR
SAN DIEGO

PAGE AI
REPORT NO. ZD-22-002
MODEL 22
DATE 6-1-56

Rev. 6-16-58

APPENDIX I-A
CUSTOMER FURNISHED - CONVAIR INSTALLED

Quan Reqd	Description	Manufacturer	Part or Spec Number
--------------	-------------	--------------	------------------------

CUSTOMER VENDED - CONVAIR INSTALLED
ELECTRONIC EQUIPMENT

1	Terrain Warning Transceiver Weight 14.6 lb	TRXED-13A
1	Transceiver Shock Mount	290-2537

OXYGEN EQUIPMENT

*3	High Pressure Oxygen Cylinder Assemblies (107 cu. ft) 177 lb	890942
----	--	--------

FURNISHINGS

1	First Aid Kit	44-0336
---	---------------	---------

*Useful load item

SPECIFICATION CHANGE NOTICE

LC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 48

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.12.9.2
(cont) Move subparagraph "two thru six"
and "note reference" to paragraph
3.12.9.12 on page 52.

Corrections to these paragraphs
are as follows:

Subparagraph three, 2nd line -
Add comma after word "exchangers".

3rd line - Change "4.5 psig" to
read "4.0 psig".

11th line - Change "5.0 psig" to
read "4.25 psig".

13th line - Change "4.25 psig"
to read "5.0 psig".

Subparagraph six, 2nd line -
Change the word "full" to
read "fuel".

AIRPLANES AFFECTED:

BY W.M. Smith
APPROVED BY A. C. Tracy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 52

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.12.9.9.2

2nd line -

Change word "indicator" to
read "indicators"

3.12.9.10.3

2nd line -

Add the words "dc motor actuated"
before the words "dump valves"

3rd line -

Delete the words "dc motor actuated"
and start the sentence with "Flame ...".

3.12.9.12.1

Move this paragraph to follow para-
graph 3.12.9.9.6 and correct as follows:

2nd line -

Delete first word "it" and replace
with "the sensing element".

AIRPLANES AFFECTED:

BY W. M. Gossick

APPROVED BY A. C. Iruey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 53

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.12.9.13.1 4th line -

Delete the word "in"

3.12.9.13.2 2nd line -

Add a comma after the word

"surface"

3.12.9.13.3 4th line -

Change word "control" to read

"controls"

AIRPLANES AFFECTED:

BY Wm. Smith
APPROVED BY A. C. True

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 55

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.12.12 Delete title "STARTING SYSTEM" and preceed existing paragraph with the following:

"STARTERS: An air turbine starter and starter control valve shall be provided for each engine. A ground starting connection shall be installed in or near the nose landing gear wheel well. Any engine may be started from the external ground source. A cross-over engine bleed system shall be provided to permit starting of the other engines after the initial engine is started from the external ground source. It shall be possible under "Standard Day", conditions to start all four engines within two and one half minutes from beginning of the first start to the time the fourth engine reaches ground idle speed. This assumes individual engine starts."

3.12.13 Change last sentence to read as follows:

"Switches shall be actuated by a handle for each engine. Handles shall be located on the glare shield above the pilots' instrument panel."

AIRPLANES AFFECTED:

BY W.M. Gossels
APPROVED BY A. C. Inuy

SPECIFICATION CHANGE NOTICE

— 100 —
BY GENE RAY
CANADA

CAN. J. BOT.

SPECIFICATION CHANGE NOTICE

2700-2701

THE PAPER. 377

$$\{ (D, \mathbf{b}_1) \} \qquad \qquad \qquad \}$$

MODEL 880

DATE 20 November 1956

REVISED

REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHARGE

P-Graph

3, 24, 1, 3

3rd line of list -

Change to read:

"four additional pressure indicator lights"

3.7 + 15

Correct paragraph number to read:

"3.14.1.5"

AIRPLANES AFFECTED

四

APPROVED BY

W. M. Donets
BY A. C. Ivay

EFFECTS OF

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 58

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.14.1.5
(Cont) Delete "Two flap position
indicators".

AIRPLANES AFFECTED:

BY Conn. Sosack

APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 61

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.14.3.6
(cont)

4th line -

Change "14/" to "1/4"

3.14.3.7

Last sentence -

the word "seller" to be
capitalized.

AIRPLANES AFFECTED:

BY Wm. Gross

APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 62

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.15.1.1 6th line -

Delete comma behind the word "gear" and add a comma following the next word "steering".

After last word in 7th line delete remainder of sentence and add the following:

"shall be provided with an electrically driven stand-by pump".

3.15.1.4 3rd line -

Delete the word "above" - after "1/2" add "and above in".

Line 2 of second subparagraph

Change "MIL-WW-T-787" to "WW-T-787"

AIRPLANES AFFECTED:

BY

APPROVED BY

W. M. J. S. S.
A. C. Inuy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 63

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.15.1.7 8th line - change punctuation

to read:

After "reservoir" add a "comma".

AIRPLANES AFFECTED:

BY W. M. Jossell

APPROVED BY A. C. Inay

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

SPEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 64

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.15.2.1 Delete number, title or reference to this paragraph.

3.15.2.1.1 Delete number, title or reference to this paragraph.

3.15.3.1 6th line -
Change "3.12.9.5.1" to "3.12.9.12"
Add FFC number "(3.20-3)" in left column

AIRPLANES AFFECTED:

BY Wm. Smith
APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 65

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.2.1

5th line -

Correct spelling of

"objection albe" to

"objectionable"

AIRPLANES AFFECTED:

BY W. M. Gossard

APPROVED BY A. C. Inney

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

SPEC NO. ZD-22-002
FILE OPPOSITE PAGE NO. 66 DATE 20 November 1956
CHANGE (ECP) NO. 1 MODEL 880 REVISED _____
CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.4 11th line -
Delete "As a design objective"
Start sentence with
"The installation "

AIRPLANES AFFECTED:

BY Com. Goss
APPROVED BY A. C. Inuy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 67

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

DATE 20 November 1956

REVISED

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.4 (cont) 2nd line - start sentence as follows:
"As a design objective equipment "

3.16.4.1 Delete paragraph.
Paragraph is to be combined with
paragraph 3.16.8.3 - page 75.

3.16.5.1 Last line - change reference
paragraph "3.17.1.3.3" to "3.17.1.3"

3.16.5.2 7th line - change "(forward or firewall)"
to "(forward of firewall)"

AIRPLANES AFFECTED:

BY W. M. Smith
APPROVED BY A. C. Inuy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 70

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 440

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.5.11 1st line - change

"contractor" to "Seller"

AIRPLANES AFFECTED:

BY L. M. Gross
APPROVED BY A. C. Inuy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 75

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

DATE 20 November 1956

REVISED

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

Change paragraph to read as follows:

3.16.8.3

COMPARTMENT LIGHTING: Lighting shall be provided in the accessory areas (electronics, hydraulic, air conditioning and electrical) for general illumination of these areas. Lights shall operate when the service doors to these areas are opened. Lights shall also be installed on the main electronic junction box, if the general area lighting is not sufficient.

AIRPLANES AFFECTED:

BY John. Gossdy

APPROVED BY A. C. Inay

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 76

CHANGE (ECP) NO. 1 MODEL 880

DATE 20 November 1956

CONTRACT TWA

REVISED

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.8.3.5

Change last sentence to read:

"These lights shall be controlled
by switches located on the cabin
attendant's panels."

AIRPLANES AFFECTED:

BY W. M. Sosich

APPROVED BY A. C. Juvey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 77

CHANGE (ECP) NO. 1 MODEL 880

DATE 20 November 1956

CONTRACT TWA

REVISED

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.8.3.10

Add paragraph as follows:

POWER TRANSFER: A switch shall be located in the pilot's compartment to transfer the aircraft electrical loads to the ground power source. Design shall be such as to minimize interruption of power. An indicator light shall be provided to show when the external power source is connected. The number of wires energized when the power transfer switch is "off" shall be held to a minimum.

AIRPLANES AFFECTED:

BY Wm. Jacobs

APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 78

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.8.6 4th line - change "the" to "each".

Change punctuation - "attendants'" to
"attendants".

6th line - add "the" after "to".

3.16.10.3 Change "one" to "two"

AIRPLANES AFFECTED:

BY L. M. Bessett
APPROVED BY A. C. Tracy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 79

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.10.4 Last line - change

"operation" to "operational"

AIRPLANES AFFECTED:

BY W.M. Jacobs
APPROVED BY R. C. Truep

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

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DATE 20 November 1956
REVISED

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.17

A.C. POWER

Heat and Vent

Delete item 3

Change item 4 to item 3

and correct to read

"Engine Inlet Anti-Icing Control"

Add new item 4

"Tail Surface Leading Edge"

Delete: Miscellaneous and Item 1 and 2

Radio - All

Delete 1 asterisk from Item 1.

AIRPLANES AFFECTED:

BY W.M. Bassett

APPROVED BY A. C. Inay

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EPC NO. ZD-22-002

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CHANGE (ECP) NO. 1 MODEL 880

REVISED

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Page

84 and 85

Page 84 should be numbered 85 and page 85 should be numbered 84 and put in proper sequence with the following changes:

Page 84 Add "RADIO-ALL (Cont)

Item 4 add "(1 of 2)"

Delete items "5" and "7"

Renumber in sequence

items "4 thru 9"

LIGHTING

Delete item 2

Change item 3 to read

"General Cabin Lighting"

Renumber in sequence "1 thru 12"

POWER PACKS

Change item 1 to read "(2 of 4)"

Change items 2, 3 and 4 to read as follows:

2. "26 volt (1 phase) "

3. "115 volt (3 phase) "

4. "28 volt (1 phase) "

AIRPLANES AFFECTED:

BY W.M. Gossett

APPROVED BY A.C. Tracy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Page ADD:

85 D.C. POWER (cont)

HEAT and VENT

Change items 2 thru 5 as follows:

2. "Wing and Pod Inlet Anti-Ice Valves"
3. "Anti-Ice Valve Position Indicator Lights"
4. "Wing and Pod Inlet Anti-Ice Relays"
5. "Air Conditioning Controls"

LIGHTING

Change items as follows:

Add to item 1 (if retractable)

Delete item 3

Renumber in sequence 1 thru 3

FUEL and OIL

Change quantity of item 1 to "(4)"

Change item 6 to read

"Oil Low Pressure Lights"

RADIO - ALL

Change item 5 to read

"Radio Compass (2)**"

AIRPLANES AFFECTED:

BY W.M. Gossela

APPROVED BY A. C. Truef

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.17 ADD: "RADIO-ALL (Cont) "under"

Essential Power

Change item 7 to read

"ATC Transponder Beacon"

Delete item "10"

Renumber items "11 and 12"

to items "10 and 11"

HEAT and VENT CONTROLS

Add "(None)"

AIRPLANES AFFECTED:

BY Wm. Gossick

APPROVED BY A. C. Inay

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

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PEC NO. ZD-22-002

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CHANGE (ECP) NO. 1 MODEL 880

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CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.17 ADD:

"A.C. EMERGENCY (cont)" under
"ESSENTIAL POWER".

POWER PACK

Change items "2, 3 and 4" as follows:

2. "26 volt (1 phase)
3. "115 volt (3 phase)
4. "28 volt (1 phase)

AIRPLANES AFFECTED:

BY C. M. Boswell

APPROVED BY A. C. Inuy

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.16.17 ADD:

"D.C. EMERGENCY (Cont)" under
"ESSENTIAL POWER"

WARNING

Delete item 2

Change item 3 to read as follows:

"Engine Fire Extinguisher Release"

Renumber in sequence "1 thru 6"

AIRPLANES AFFECTED:

BY C. M. Bosset
APPROVED BY A. C. Truef

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

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CHANGE (ECP) NO. 1 MODEL 880

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.17.1 1st paragraph, lines 3 and 4

Change "Contractor" to "Seller"

Under description change as follows:

1st item - "HF Communication System"

10th item - "ATC Transponder Beacon System"

Add under "Provisions For The Following Systems Shall Be Made."

"Second HF Communication System"

"Second ATC Transponder Beacon System"

AIRPLANES AFFECTED:

BY John Sossots
APPROVED BY A. C. Iruey

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A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

SPEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 93

CHANGE (ECP) NO. 1 MODEL 880

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DATE 20 November 1956

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.17.1.5 13th line - change
"Customer" to "Buyer"

AIRPLANES AFFECTED:

BY W.M. Ross
APPROVED BY A. C. Truey

CONVAIR
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(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

SPEC NO. ZD-22-002

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CHANGE (ECP) NO. 1 MODEL 880

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.17.1.7 9th line - change

"smalles" to "smallest"

AIRPLANES AFFECTED:

BY W.M. Bassett

APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

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FILE OPPOSITE PAGE NO. 100

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CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.17.2.3.7 4th from last line on this page
change "six" to "five"

AIRPLANES AFFECTED:

BY John. Borsig
APPROVED BY A. C. Truett

CONVAIR
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(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

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CHANGE (ECP) NO. 1 MODEL 880

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.17.2.3.7
(cont)

11th line - after "input"

add the following:

"and at each microphone".

End paragraph at "performance".

3.17.3.1.1

12th line - change

"excepting" to "except"

AIRPLANES AFFECTED:

BY W.M. Sosaty

APPROVED BY A.C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
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SPECIFICATION CHANGE NOTICE

AC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 105

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

REVISED

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.19.1.1 Delete last sentence -
 sentence to be added to
 paragraph 3.19.1.1.7.

AIRPLANES AFFECTED:

BY W.M. Gorsick
APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 107

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

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CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.19.1.1.7

Add to this paragraph the last sentence from paragraph 3.19.1.1 as follows:

"All passenger facilities including reading lights, fresh air and oxygen outlets, hostess call buttons and windows shall be provided for each seat shown in the All-Tourist Version".

AIRPLANES AFFECTED:

BY A. M. Bassett
APPROVED BY A. C. Truey

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 108

CHANGE (ECP) NO. 1 MODEL 880

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AUTHORITY AND REASON FOR CHANGE:

DATE 20 November 1956

REVISED _____

CHANGE

Paragraph

3.19.2.1.3 Delete 1st item of list

"Cabin Heating and Ventilating"

AIRPLANES AFFECTED:

BY W. M. Bassett
APPROVED BY A. C. Inuy

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A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

C NO. ZD-22-002

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FILE OPPOSITE PAGE NO. 119

REVISED

CHANGE (ECP) NO. 1 MODEL 880

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.20.1.2

Revise 2nd paragraph as follows:

"A dual airflow indicator which will indicate compressor inlet and out pressure (inches of Hg) shall be installed for each compressor duct."

AIRPLANES AFFECTED:

BY W.M. Rosato

APPROVED BY A.C. Truef

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION
(SAN DIEGO)

SPECIFICATION CHANGE NOTICE

SPEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 120

CHANGE (ECP) NO. 1

CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE:

Administrative type changes, corrections and
revisions to clarify intent of specification.

CHANGE

Paragraph

3.20.1.3.1

2nd line - after word "with"

add the following:

"Individual air vents closed and"

6th line - change "Page" to

"Figure 3.19-11."

NOTE: Figure 3.19-11 to follow

Figure 3.19-10 when in-
corporated.

...PLANES AFFECTED:

FORM 618C

BY W.M. Lovette
APPROVED BY A. C. Inley

CONVAIR
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SPECIFICATION CHANGE NOTICE

PEC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 123

DATE 20 November 1956

CHANGE (ECP) NO. 1

MODEL 880

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AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.20.1.11 3rd line - change

"form" to "from"

AIRPLANES AFFECTED:

BY Wm. Brooks

APPROVED BY A. C. Truey

 **CONVAIR**
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SPECIFICATION CHANGE NOTICE

EC NO. ZD-22-002

FILE OPPOSITE PAGE NO. 126

DATE 20 November 1956

CHANGE (ECP) NO. 1 MODEL 880

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CONTRACT TWA

AUTHORITY AND REASON FOR CHANGE: Administrative type changes, corrections and revisions to clarify intent of specification.

CHANGE

Paragraph

3.20.3.2 Change

"8.2 psi" to "8.6 psi"

AIRPLANES AFFECTED:

BY W.M. Daniels
APPROVED BY A. C. Inley